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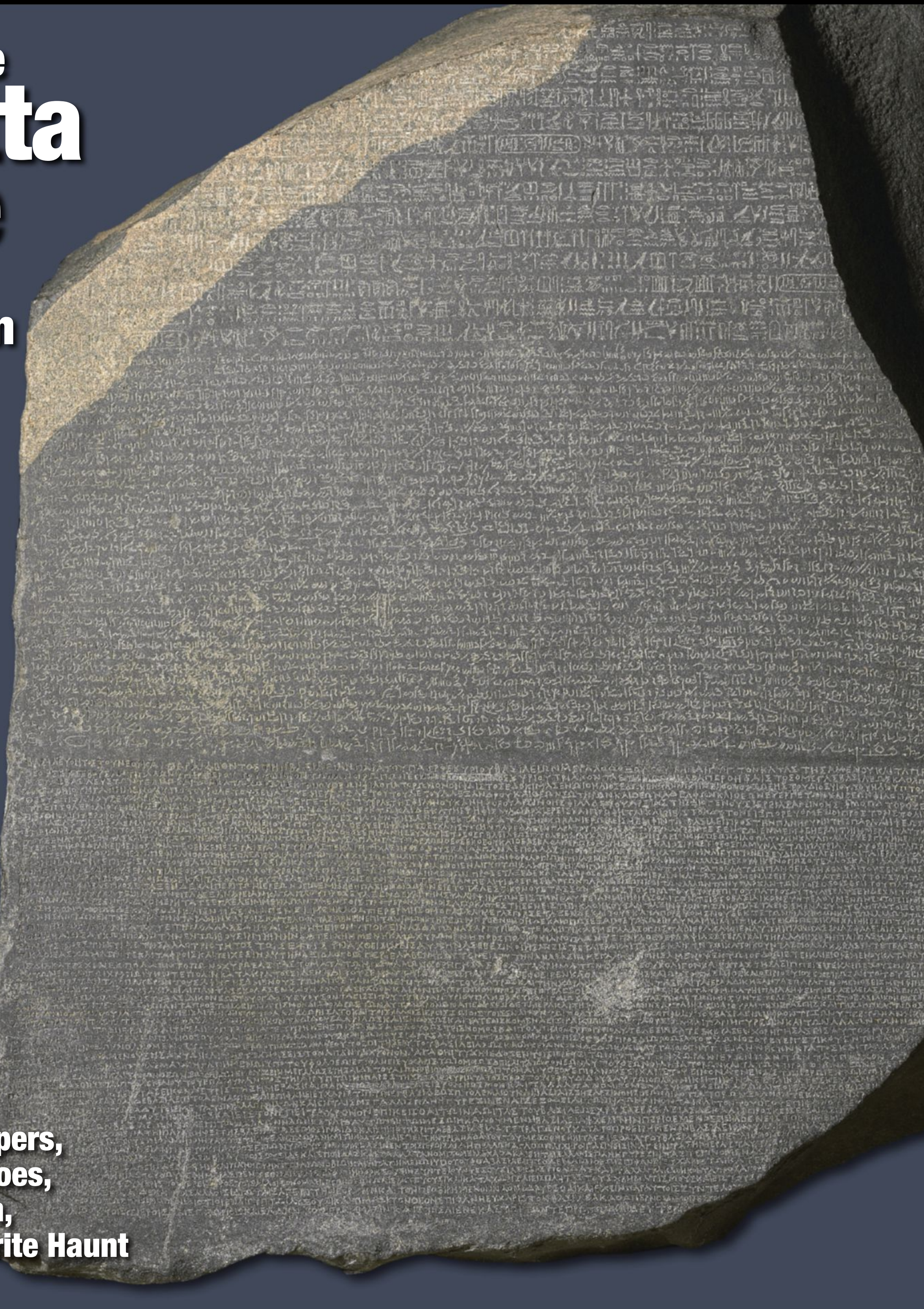

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COVER: The Rosetta Stone, discovered at Rashid, Egypt, 1799
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EDITOR'S LETTER

TRANSLATING THE PAST

The Rosetta Stone, known worldwide because its inscription holds the key that allowed scholars to finally read hieroglyphics, also tells of the ruthless victory of Egypt's pharaoh Ptolemy V over insurgents. "In the Time of the Rosetta Stone" (page 50), by contributing editor Jason Urbanus, covers the excavations of the ancient city of Thmuis in the Nile Delta. Archaeologists have recently uncovered the first evidence that a bloody siege did indeed take place there, giving credence to the stone's account of incidents from the Great Egyptian Revolt.

Mosaic, Uzès

Located in a rock shelter close by the confluence of the Pecos River and the Rio Grande is an elaborate mural measuring nearly 26 feet long. This extraordinary painting is the subject of "Reading the White Shaman Mural" (page 32), by deputy editor Eric A. Powell. The multilayered pictographs date back millennia, and have been interpreted as depicting a creation myth and the story of the dawn of time.

"Marooned in Russian America" (page 44), by senior editor Daniel Weiss, brings us the tale of the 372-ton frigate *Neva*, one of the most celebrated vessels in Russian history. In 1813, the ship sank in a storm off of Sitka, Alaska, and was never found. Now, more than 200 years later, archaeologists have learned that the few passengers and crew who survived the *Neva* shipwreck likely did so by working together despite the extreme privations they faced.

In "Evolution of a Town" (page 40), associate editor Marley Brown tells of the discovery, in the Occitanie region of southern France, of the earliest stages of the Roman town of Ucetia. Built atop an earlier Celtic settlement, Ucetia dates back to the first century B.C., and its buildings and mosaics are offering researchers important insights into urbanization during the early days of Rome's expansion across Europe.

Residents of Seoul, South Korea, have long been fortunate to have at their city's center Mount Acha, a 1,000-foot-high retreat with quiet wooded trails and panoramic views. What is little known is that Mount Acha once had great strategic significance. "Fortress Above the City" (page 56), by Hyung-eun Kim, covers the work of archaeologists who have now revealed that the mountain offered ideal conditions for a military stronghold of the Goguryeo Kingdom. The 21 fortification complexes found at the site, built more than 1,500 years ago, once housed as many as 2,000 soldiers. Decades of excavations on Mount Acha, the first major Goguryeo-era site identified in South Korea, are now giving its citizens an unprecedented glimpse into their history.

And don't miss "Letter From Singapore" (page 61), by Vaishnavi Chandrashekhar, which examines the fascinating fourteenth-century past of this modern economic powerhouse.

Claudia Valentino

Claudia Valentino
Editor in Chief

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FROM THE PRESIDENT

FURTHERING OUR MISSION

The holiday season is a time to gather with family and friends, exchange gifts, and remember those less fortunate than ourselves. It is also a time when we count our blessings. Therefore, I wish, in this letter, to thank our supporters, and particularly the generous benefactors who have endowed our programs, enabling the Archaeological Institute of America (AIA) to carry out our mission to excavate, educate, and advocate. Our programs include public lectures hosted by our Local Societies, the preservation and conservation of archaeological sites around the world, the publication and dissemination of fieldwork reports, undergraduate participation on excavations, and research by graduate students and recent PhDs.

AIA president Jodi Magness

In a previous letter, I addressed the proposed cuts to federal agencies, such as the National Endowment for the Humanities that provide crucial support for archaeological fieldwork and research. The shrinking pool of public funding means that the AIA's support for these projects is needed now more than ever.

Almost all our fellowships and grants have been endowed by individuals, as a glance at our website indicates—see archaeological.org/grants. One of these individuals was Lloyd Cotsen, whose recent passing we mourn. Cotsen, a former AIA Trustee and recipient of the AIA's Joukowsky Distinguished Service Award, endowed the Cotsen Excavation Program to support archaeological fieldwork.

The stories in ARCHAEOLOGY cover the latest discoveries from around the world—but you might not realize that the fieldwork and research that inform these stories are very expensive, as I can attest from personal experience. Since 2011, I have been directing excavations at Huqoq, an ancient village in Israel's Galilee, where we are bringing to light the remains of a monumental Late Roman (fifth-century) synagogue paved with stunning mosaics. The excavations now cost over $200,000 annually (with a one-month-long dig season)—money that must be raised each year. This covers equipment, the cost of securing the site and its finds, and housing and meals for the team, to name only a few of the expenses incurred. As president of the AIA I cannot apply for our grants, but I am proud that we are able to support the fieldwork and research of other archaeologists.

So, at this holiday season, I wish to thank our benefactors, and I invite you to join them. What can you do? If you are not already a Supporting Member, please join today. If you are, I thank you and hope you will give the gift of membership to a family member or friend. And finally, please consider donating to our programs, all of which depend on the support of individuals like you, at archaeological.org/giving.

Last, but not least, please accept my best wishes for a joyful holiday season.

Jodi Magness

Jodi Magness
President, Archaeological Institute of America

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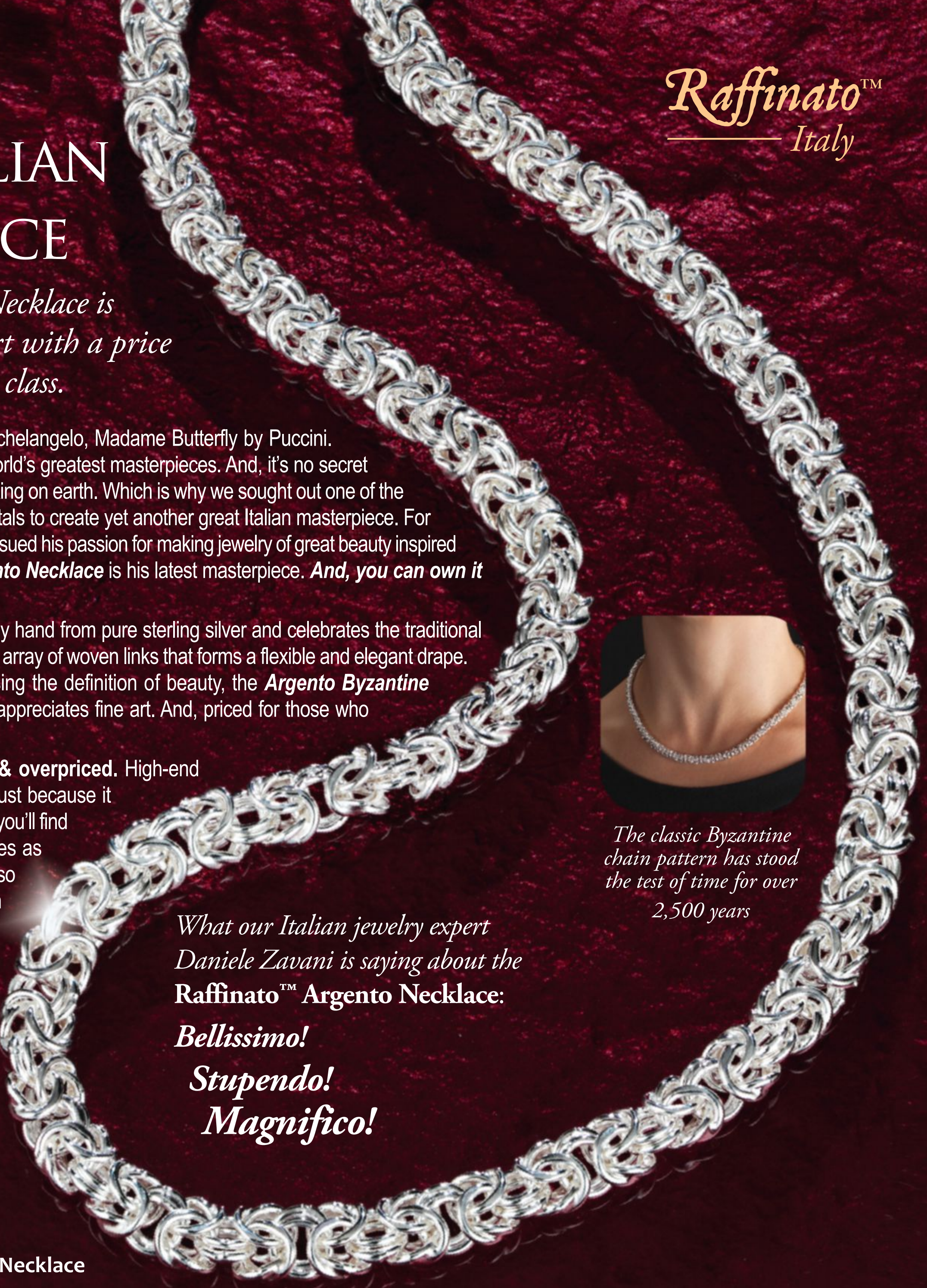

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LETTERS

FROM OUR READERS

CROWNING GLORY

Thank you very much for Marley Brown's excellent article about the Egyptian mummy shroud ("To Die like an Egyptian," September/October 2017). Margaret Maitland is correct that the gold laurel wreath resonated with Egyptian sensibilities as a symbol of triumph over death. One can note an Egyptian precedent: the "crown (or wreath) of justification." This is conferred by the gods on the blessed dead; it is mentioned from the New Kingdom on and is the subject of Chapter 19 of the *Book of the Dead*.

Edmund S. Meltzer
Carpinteria, CA

PAINFUL PAST

Samir S. Patel's article on Spanish Civil War archaeology ("Landscape of Secrets," September/October 2017) is superb—perhaps the best I've ever read in your magazine. He handled the many layers of the research, including the painful politics of the Civil War, with great sensitivity and skill. A science writer myself, I'm enormously impressed.

Constance Hellyer
Seattle, WA

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FATE OF THE MOCHE

Thank you for your thoughtful article, "Painted Worlds" (September/October 2017), on the wall murals discovered (and rediscovered) at Pañamarca—quite an abundant and vivid artistic record of the Moche's complex beliefs! What is particularly fascinating to me is the relatively rapid decline of the Moche. Michele Koons rightly states that there were most likely many factors that were too much for the culture to sustain. One of these is most certainly a series of successive El Niño events. The paleoclimate in Peru has been analyzed from ice cores from the Quelccaya Ice Cap in the Andes of southern Peru. From these, it appears that there were extreme droughts between A.D. 570 and 610, followed by heavy rainfall from 610 to 650, and again after 760. These dramatic climatic oscillations would have weakened the Moche, as they would have affected their ability to procure food through both farming and fishing. Add into that mix the fact that the Wari were rapidly expanding their dominance in the seventh century and it all may have been too much for the Moche to bear.

Dominique R. Lacerte
Santa Ynez, CA

PERSONAL CONNECTION

I was pleasantly surprised to see Los Adaes featured in "Off the Grid" (September/October 2017). I had the opportunity to visit Los Adaes this past June. It is such an interesting site that really exhibits the frontier life for the colonial Spanish and French and their interactions with the various Native Americans that lived there. It is also a place special to me because I am a descendant of at least two dozen people—Spanish, French, and Native (including Apache slaves)—who lived there while it was a functioning fort and mission. Many of these people were forced on the exodus to San Antonio by the Mexican Spanish government and later made their way back to east Texas in the 1780s and 1790s, and eventually western Louisiana in the 1840s and 1850s.

Joshua Davis
Cookeville, TN

THE RIGHT TOOL?

Is anyone certain that the item labeled a leatherworking tool ("Lost Kingdom of the Britons," September/October 2017) really is that? To me, it looks very much like the old woodworking tool called a center bit, the modern power-drill descendent of which is called a spade bit. If the builders of the fort used pegs to join the timbers, they would have needed a tool to drill the holes, and the smiths of the day were obviously capable of making such an implement. Maybe the object in question deserves another look.

Larry B. King
Wolf Creek, OR

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FROM THE TRENCHES

LATE-BREAKING NEWS AND NOTES FROM THE WORLD OF ARCHAEOLOGY

York Gospel

THE HIDDEN STORIES OF THE YORK GOSPEL

Around A.D. 990, the monks at Saint Augustine's monastery in Canterbury, England, made an illuminated copy of the four gospels of the New Testament. This parchment manuscript is one of the oldest books in Europe and is still used in ceremonies at the Cathedral and Metropolitan Church of Saint Peter in York, better known as York Minster, where it has been kept since about A.D. 1020. All of that history has left its traces on the book's pages. Now, researchers have found a way to use erasers to recover DNA from the book's parchment pages without harming them. DNA sampling typically requires destroying a small piece of whatever is being studied. "There was no way they were going to let us cut the York Gospel," says Sarah Fiddyment of the University of York, "so being able to do it noninvasively is incredible because we get access to these books that otherwise we'd never get to see."

The technique that Fiddyment has helped pioneer requires only a white plastic eraser of the kind typically used in drawing classes. She rubs the eraser on the parchment page, creating a triboelectric effect—essentially static electricity—which allows tiny amounts of the parchment and whatever else might be on the page to stick to the bits that come off of the eraser. The eraser waste is then collected and treated with chemicals to recover proteins and DNA. The technique can be used on any protein-based material such as bone or ivory, according to Fiddyment.

The research team's analysis has been able to show that the book is primarily made of calfskin and that four of the five calves whose gender could be identified were female—not male as might be expected for people who raised cattle for dairying. This finding has led the researchers to speculate that the parchment may have come from cattle that died during an outbreak of a disease called murrain that swept through cattle herds in Great Britain and Ireland during the late 900s.

One document that was added to the book in the fourteenth century was made of sheepskin. It records property that was owned by the church in York. In some cases sheepskin was preferred for legal documents because it is not as durable as calfskin. It will come apart if you try to erase what's written on it, and therefore it is easier to detect whether the writing has been altered.

Human DNA recovered from the book also revealed which pages had been handled most frequently. Aside from a page that had been restored in the mid-twentieth century, which had an anomalously large amount of DNA, those that show the most use were in folio 6, a bundle of calfskin parchment that makes up pages 23–30 in the book. Those pages contain the oaths that the clergy use to swear themselves to the church. "Every canon of York has sworn their oath on this book since the thirteenth century," says Victoria Harrison, assistant director of collections and learning at York Minster.

York Minster, York, England

The study also revealed a hidden danger to the future preservation of the York Gospel. The DNA of bacteria from the genus *Saccharopolyspora*, which can cause a measles-like spotting of the pages, was found throughout the book. Conservators will now have a chance to stop the bacteria before it can damage the manuscript.

This work opens up a new area of DNA research—examining parchment documents to study changes in livestock over hundreds of years. "Parchment is this incredible untapped resource," says Fiddyment. "Basically what you've got all over the world is millions of animals that are dated and located."

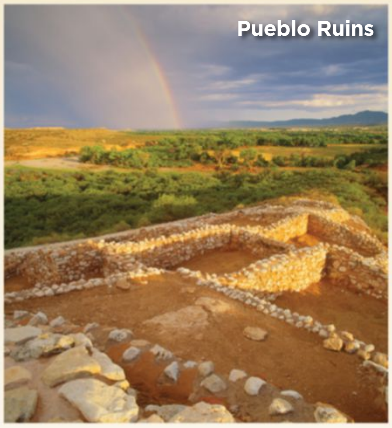
—Zach Zorich

OFF THE GRID

TUZIGOOT NATIONAL MONUMENT, TUZIGOOT, ARIZONA

On a desert ridge in Arizona's Verde Valley sits Tuzigoot National Monument, the ruins of a 110-room pueblo built about 1,000 years ago by a pre-Columbian culture archaeologists call the Sinagua. Tuzigoot was originally excavated in the 1930s with funding from the New Deal Works Progress Administration. It was also then that one of the first excavators, who was Apache, gave the site its name, which means "crooked water" in the Apache language. The history of the Sinagua people is shrouded in mystery, as they had abandoned Tuzigoot and other settlements in the area by the time the Spanish arrived. They are known for the remains of their pit houses and pueblos that dot central Arizona, as well as clay pottery called Alameda Brown Ware, and expansive, intricate petroglyphs that seem to whirl across rock faces. While the exact reason for the Sinagua's departure from the Verde Valley remains unknown, Native American oral histories provide clues that supplement archaeological data. "Tuzigoot and other Sinagua settlements appear in the oral history," explains Matt Guebard, chief of resources management and archaeologist at Tuzigoot. "Our interpretation of the site is absolutely informed by collaboration with native communities."

Tuzigoot National Monument, Arizona


Pueblo Ruins

THE SITE

The ruin, which is currently a property of the National Park Service, ranges between two and three stories tall, and is looped by a circular path from which visitors can see into the pueblo and back down across the valley and the Tavasci Marsh. The first room visitors encounter, known as the plaza, is the only flat space on the hill and would have been used as a communal area. At the top of the pueblo, the Park Service has fully reconstructed a tower room to give visitors an impression of what the village looked like in its prime, when residents lived in close, apartment-like quarters.

WHILE YOU'RE THERE

Before climbing up to the pueblo, begin your tour at the visitor center, a building dating to the original 1935 excavations and designed to blend in with the ruins. Tuzigoot's museum provides a historical overview of the Sinagua culture and displays artifacts uncovered from the site. In a day, an ambitious traveler can also take in nearby Montezuma Castle National Monument, another Sinagua pueblo ruin built into a sheer limestone cliff. The semi-abandoned copper mining town of Jerome, a popular tourist destination, is nearby, and Sedona is just over 20 miles away.

—Marley Brown

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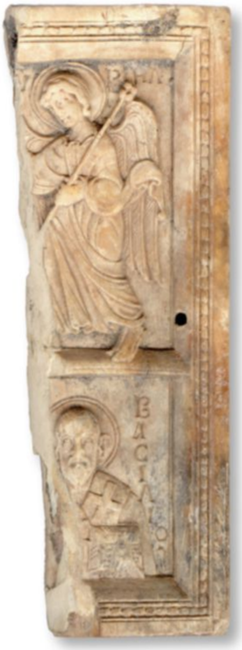
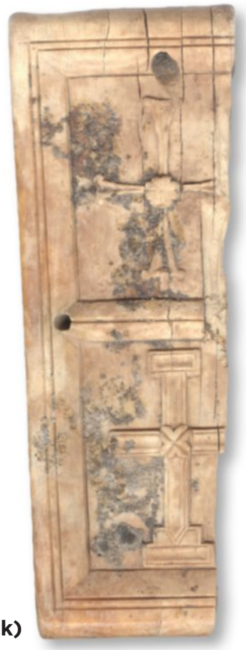
ICONIC DISCOVERY

Archaeologists have unearthed a fragment of an ivory icon at the Byzantine frontier fortress of Rusokastro in southeastern Bulgaria. Depicting the archangel Gabriel and Saint Basil, the 3.2-inch-tall icon dates to the tenth century and was likely made in Constantinople on the orders of an emperor, says archaeologist Milen Nikolov of the Burgas Regional Historical Museum. "This was an expensive—very expensive—item," says Nikolov, who is surprised that such an elaborate artifact made its way to the imperial frontier. He and his team discovered the object, which was once a wing of a triptych, beneath a large thirteenth-century building that was probably the residence of the local governor.

—Eric A. Powell

Icon (front)

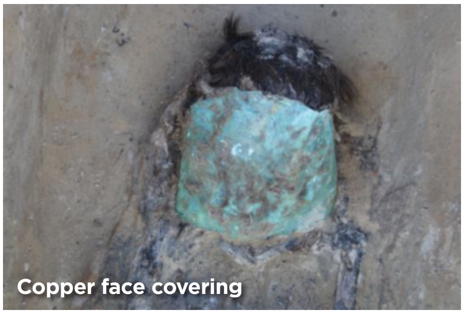




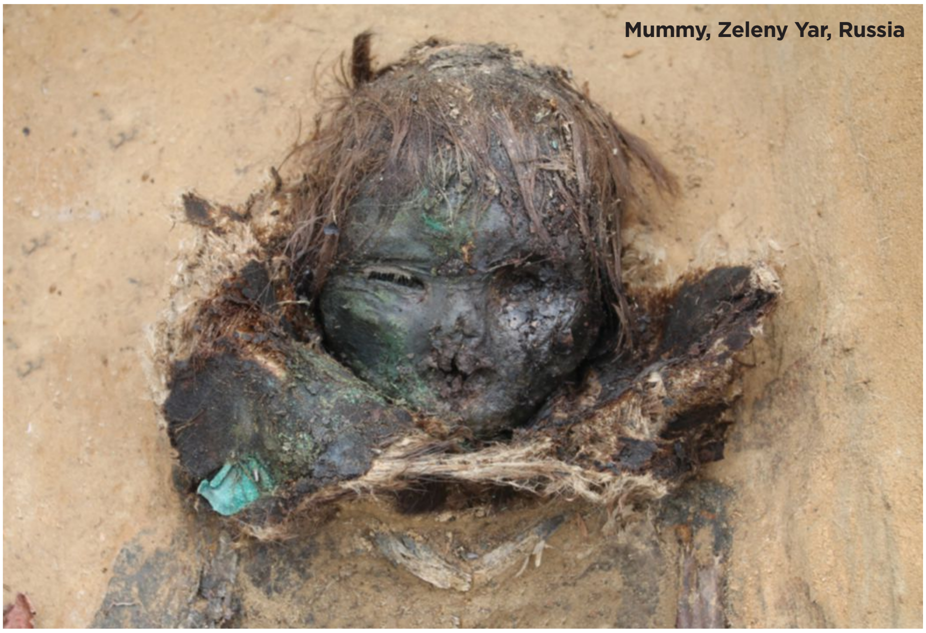
Icon (back)

ARCTIC ICE MAIDEN

Mummy burial



Copper face covering



Mummy, Zeleny Yar, Russia

At a medieval necropolis in the Russian High Arctic, researchers have excavated the naturally mummified remains of a woman who lived some 800 years ago. Dozens of burials have already been discovered at the site, known as Zeleny Yar, but this is the first woman to have been identified. "Before this, we thought that perhaps only men were buried here," says Arctic Research Center archaeologist Alexander Gusev, who leads the excavation. "This transforms our understanding of the burial ground." The woman's hair and even eyelashes are perfectly preserved thanks in part to a copper plate that covered her face. Gusev notes that after oxidizing, the plate set off a chemical reaction that helped slow decomposition. The plate was fashioned from a copper cauldron that was made in Persia, almost 4,000 miles to the south. This object and other Persian artifacts found at the site suggest that the people buried at Zeleny Yar were engaged in long-distance trading networks, likely exchanging furs for exotic foreign goods.

—Eric A. Powell

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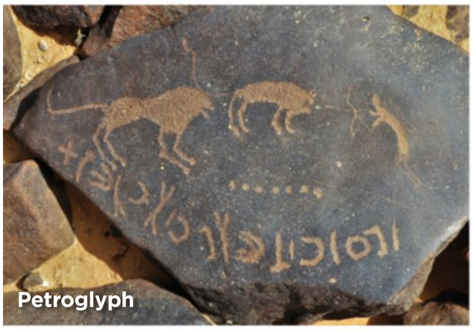
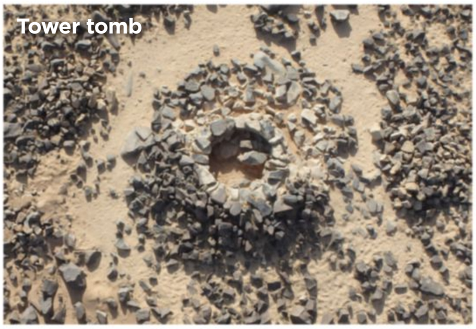
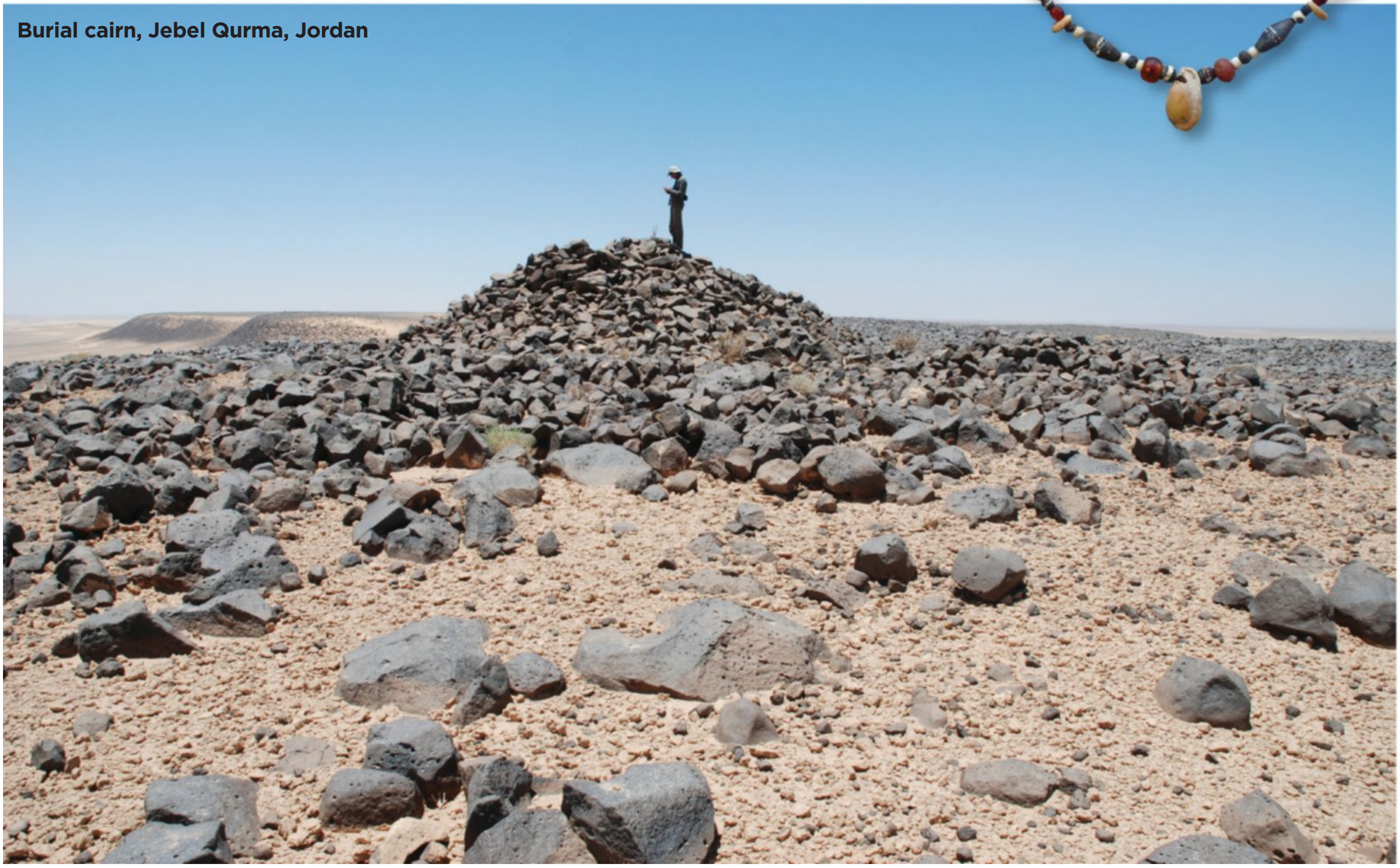
FROM THE TRENCHES

DESERT LIFE


Petroglyph


Tower tomb

Bead necklace


Burial cairn, Jebel Qurma, Jordan

The Jebel Qurma region of northeast Jordan is today an almost uninhabitable stretch of land marked by desert wasteland and basalt hills. However, current surveys in the area have revealed a wealth of archaeological monuments that tell a story of a different time. Housing foundations, former campsites, rock art, inscriptions, and hundreds of burial cairns—piles of stones heaped over human inhumations—have recently been identified and attest to once-thriving periods of human occupation. While the evidence shows that human settlement was often centered in secluded areas, the dead were buried in visible, prominent locations on hilltops and high plateaus. One cemetery dating back 4,300 years indicates that people were living in the area from at least the Early Bronze Age. Toward the end of the first millennium B.C., a sophisticated culture that constructed large and complex "tower tombs" inhabited the region. These tombs were built from stones weighing more than 600 pounds each, could reach a height of 16 feet, and could be five feet in diameter. "Our research yields wholly new data and insights," says Jebel Qurma Archaeological Landscape Project director Peter Akkermans. "Piece by piece we are beginning to understand the archaeology of the region and its importance for Levantine and Near Eastern archaeology in general."

—Jason Urbanus

LIVING EVIDENCE

In recent years, scientists have determined that early humans interbred with other hominin species, such as Neanderthals and Denisovans, by comparing the genomes of present-day humans with DNA taken from hominin fossils. Now, however, evidence of interbreeding has been found based on analysis of human genomes drawn from people currently living around the world. Specifically, researchers have focused on a gene called MUC7, which codes for a protein found in saliva.

A team led by Omer Gokcumen and Stefan Ruhl of the State University of New York at Buffalo studied how MUC7 varied in 2,500 present-day human genomes. To their surprise, it took a dramatically different form in around 5 percent of people from sub-Saharan Africa. The most likely explanation, the researchers concluded, was that some 150,000 to 200,000 years ago, a group of humans in Africa interbred with an unknown hominin species, whose version of MUC7 has been passed down to people living there today.

Although this interbreeding took place before humans left Africa, the mystery hominin's genes appear not to have been carried by those who left the continent. Based on known rates of genetic mutation, the hominin appears to have diverged from modern humans around one to two million years ago, and the researchers believe it was probably similar to other hominin species of the era, such as *Homo erectus*, Neanderthals, and Denisovans, in terms of brainpower and technological skill.

As genomic techniques grow more refined, Gokcumen believes we will detect more and more instances in which early humans interbred with other hominin species. "We are seeing that there were multiple humanlike groups that modern humans absorbed rather than replaced," he says. "We are only seeing them now because we are able to look at entire genomes."

—Daniel Weiss

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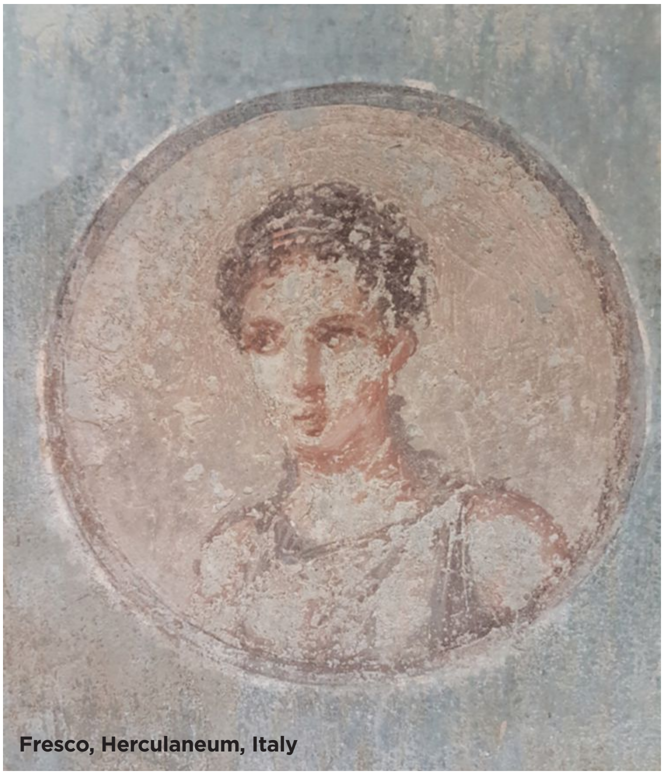
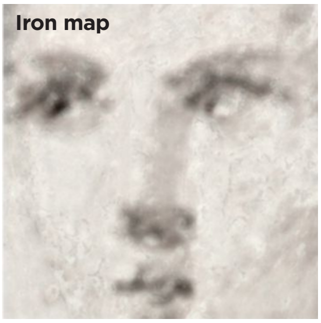
FROM THE TRENCHES

PUTTING ON A NEW FACE



Fresco, Herculaneum, Italy

While the streets, houses, and shops of ancient Herculaneum were preserved to a remarkable degree by the eruption of Mount Vesuvius in A.D. 79, its vibrant frescoes have suffered a tremendous toll in the years since they were first exposed. By using a new portable X-ray fluorescence (XRF) device called Elio, chemist Eleonora Del Federico of the Pratt Institute has been able to see behind the damage to the surface of a painting excavated in the House of the Mosaic Atrium 70 years ago. "Using this device we can see a complex and sophisticated painting technique with details not visible to the naked eye today," says Del Federico. But it was the "iron map"—XRF shows researchers the elemental composition of artifacts and how the elements are distributed within the object—that Del Federico says "blew her mind." She says, "The iron map shows not only a beautiful woman, with detail, but also reveals her thoughtful expression and, for me, her humanity. Looking at the iron map, to me, is like looking into this woman's soul."



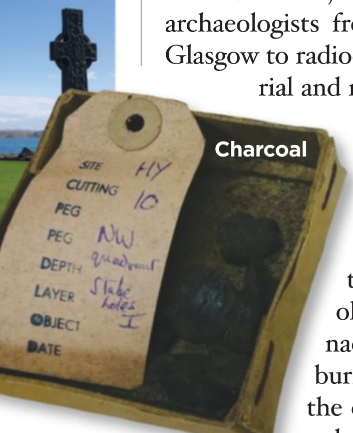
Iron map

—Jarrett A. Lobell

FIT FOR A SAINT

Analysis of charcoal from Scotland's monastery island of Iona has concluded that a wooden hut often associated with Saint Columba indeed dates to his lifetime in the late sixth century. Columba, an Irish abbot and missionary, was a dominant force in the spread of Christianity throughout Scotland. He founded the monastery on Iona, which stood as a bastion of literacy and scholarship for centuries and attracted legions of pilgrims until Catholic Mass was made illegal during the Reformation in the sixteenth century. Originally uncovered in the 1950s by archaeologists Charles Thomas, Peter Fowler, and Elizabeth Fowler, the charcoal comes from an ash layer of Tórr an Abba, or "Mound of the Abbot," on the monastery's grounds. While the three scholars believed they had found evidence of Columba's cell, which appears to have been turned into a monument not long after his death in 597, they were never able to prove it.

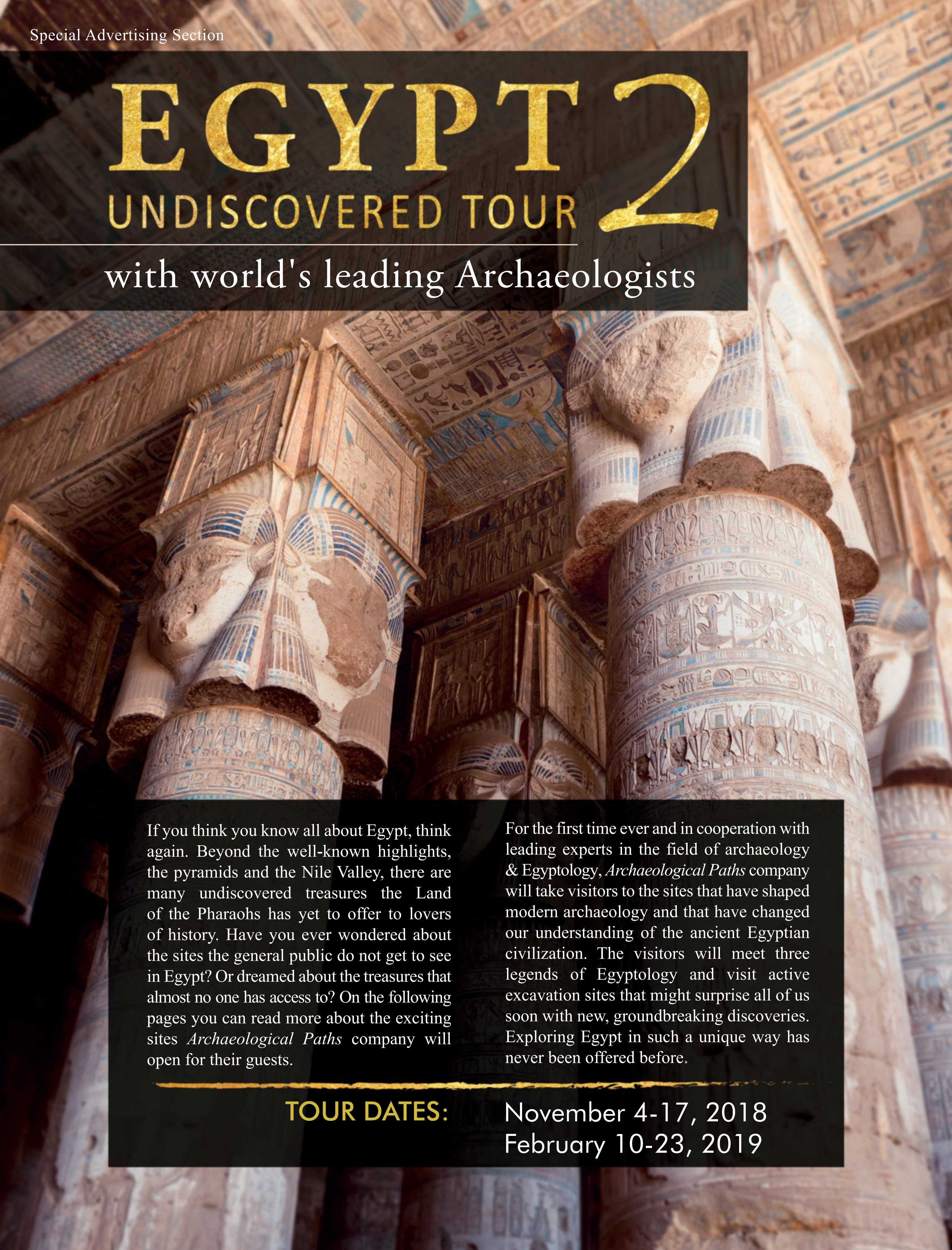
Iona Abbey, Scotland



Charcoal

After storing the Iona samples for years in his own garage, Thomas bequeathed them to Historic Environment Scotland, which teamed up with archaeologists from the University of Glasgow to radiocarbon date the material and revisit the site. "What they excavated in the 1950s was a hut that didn't look like it had many stages, perhaps one or two constructions," says lead archaeologist Adrián Maldonado. "At some point it burned down and that's the charcoal we were able to date." The latest possible date for the charcoal is A.D. 650, making it likely that Columba, and perhaps later abbots too, used the cell.

—Marley Brown



EGYPT 2

UNDISCOVERED TOUR

with world's leading Archaeologists

If you think you know all about Egypt, think again. Beyond the well-known highlights, the pyramids and the Nile Valley, there are many undiscovered treasures the Land of the Pharaohs has yet to offer to lovers of history. Have you ever wondered about the sites the general public do not get to see in Egypt? Or dreamed about the treasures that almost no one has access to? On the following pages you can read more about the exciting sites *Archaeological Paths* company will open for their guests.

For the first time ever and in cooperation with leading experts in the field of archaeology & Egyptology, *Archaeological Paths* company will take visitors to the sites that have shaped modern archaeology and that have changed our understanding of the ancient Egyptian civilization. The visitors will meet three legends of Egyptology and visit active excavation sites that might surprise all of us soon with new, groundbreaking discoveries. Exploring Egypt in such a unique way has never been offered before.

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The Valley of the Golden Mummies

treasures underneath the sand

One of the greatest discoveries made by Egypt's legendary archaeologist Dr. Zahi Hawass has to be **The Valley of the Golden Mummies**, yet it is a site that is still closed to the world. When the discovery was made near the oasis of Bahariya, it quickly became apparent that it was an even more important discovery than that of King Tutankhamun's tomb in 1922. The cemetery of the Golden Mummies, which is thought to cover an area of approximately 2.3 square miles, has been estimated to contain more than 10,000 mummies, many of them completely covered with gold. Already during the first season of excavations a total of 108 mummies were found. *"When the first tomb was opened, the brilliance of gold shone in the sunlight among the piles of sand"*, said Dr. Hawass.

This discovery provides archaeologists with information on the life of the Egyptians in the Greco-Roman era and an insight that not only the godlike pharaohs held power.

The Valley of the Golden Mummies teaches us just how influential the rich merchants and nobles of Bahariya were at that time. The Valley with its amazing finds has never been open to visitors and it will be specially opened next spring for the very first time to an exclusive group of *Archaeological Paths'* guests led by Dr. Hawass.

Dr. Zahi Hawass sums it up this way: *"When people ask me which of my discoveries has meant the most to me personally, I often think first of the Valley of the Golden Mummies at Bahariya Oasis. Introducing this amazing site to the world propelled me into an international spotlight. I feel privileged to have been a part of this story, which is my own personal history as well as the history of Egyptian archaeology."*

Abu Rawash and Abu Sir

Egypt's Forgotten Pyramids

In proximity to the famous Giza Plateau, yet hidden from the view of the masses of tourists visiting Giza every day, the Forgotten Pyramids of Abu Rawash and Abu Sir answer many profound questions about the development of pyramids in Egypt.

The pyramids are over 4500 years old and were built during the reign of the Fourth and Fifth Dynasty Pharaohs. Abu Rawash and Abu Sir are closed to visitors, however *Archaeological Paths* will have exclusive access for their guests for the very first time next year. The visitors will be joined by a world-class expert on the Egyptian Pyramids – Dr. Tarek El-Awady.

Abu Rawash – This is Egypt's most northerly pyramid, also known as the Lost Pyramid. Originally, it was thought that this pyramid had never been completed, but the current archaeological consensus is that not only was it completed, but that it was built about the same size as the Pyramid of Menkaure – the third largest of the Giza Pyramids.

When Djedefre, a son of the Khufu, who built the Great Pyramid, ascended the throne he moved 8 km north of the Giza Plateau for building a very different pyramid complex on an even higher plateau that looks down upon Giza. Did he rebel from the family line? Within a decade or two, Khafre brought the court back to Giza to build the Second Pyramid and, probably, the Great Sphinx. Next year *Archaeological Paths* will make it possible for you to explore the mysterious Abu Rawash pyramid.

Abu Sir – the necropolis of Abu Sir contains the pyramids of the Fifth Dynasty Kings of Egypt, called the Kings of the Sun, because they were the first to build Sun Temples with obelisks dedicated to Ra, the sun god. The name Abu Sir came from the ancient word "Der Osir", meaning "the House of Osiris", the god of the underworld. The name of Abu Sir allows us to understand how important this site was to the Ancient Egyptians. Next to the pyramids, there is the largest Old Kingdom non-royal tomb of a high official called Ptahshepses. In the nearby mortuary temples one can admire elaborate sculptured wall reliefs and columns in the forms of palm, lotus, and papyrus plants.

There is no better person to present this site to visitors than **Dr. Tarek El-Awady**: *"I worked in Abu Sir as the Field Director of the excavation. We had many wonderful discoveries there. Undoubtedly, Abu Sir is one of the most magnificent archaeological sites in Egypt, known as the site of the Forgotten Pyramids."*

Middle Egypt

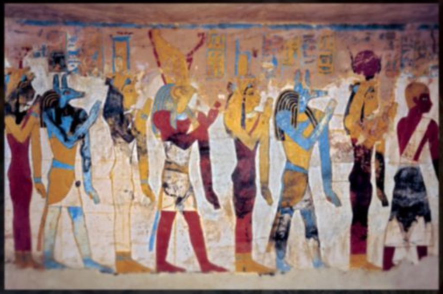
the land of one god, Aten

Middle Egypt is a region which represents one of the most important periods in development of ancient Egyptian civilization. The Pharaoh Akhenaten made Amarna his capital – he was one of the most controversial pharaohs in history, called a rebel and a lunatic by some, yet others see him as a great visionary who created the first monotheist religion in Egypt. Middle Egypt is still rarely visited by tourists, but it should not be missed by anyone interested in Egyptology who wants to understand this great ruler, husband of Nefertiti and predecessor of Tutankhamun.

Middle Egypt has many impressive sites to offer:

The beautiful rock-cut tombs in **Beni Hasan**, carved into the high limestone cliffs, radically different from the Royal Tombs in the Valley of the Kings which show us pharaohs' way to the afterlife. Beni Hasan gives a rare insight into the daily life of ancient Egyptians, their customs and beliefs through well-preserved scenes depicting daily activities, dancing, baking bread, and even a husband and wife on their wedding night!

Archaeological Paths' guests will also explore a complex of underground catacombs in **Tuna el-Gebel** which were used to store thousands of animal mummies. This is where Dr. Zahi Hawass began his career as an Egyptologist and he will revisit this site during Egypt 2 – Undiscovered tour. Other sites include the temple of Seti I in **Abydos** and the complex in **Dendera**. The temple of Seti I, once the holiest site in the country and the burial place of the first kings of Egypt, was also believed to be the temple where god Osiris was buried. The Dendera complex of multiple chapels and shrines extends to around 430,000 square feet. The main temple of goddess Hathor allows us to marvel at monumental columns and spectacular ceilings with the most vibrant paintings from antiquity.



Taposiris Magna

in search of Cleopatra and Mark Antony

Taposiris Magna is an active archaeological site located west of Alexandria. In the last eleven years, Dr. Zahi Hawass and Dr. Kathleen Martínez have been excavating the temple, searching for the tombs of Cleopatra and Mark Antony. The site is closed to all tourists. For many years this temple was considered insignificant, even unfinished, but at that time the researchers did not realize the importance of this site. Dr. Kathleen Martínez reopened excavations in Taposiris Magna and the results have surprised the archaeological world. New discoveries not only show that Taposiris Magna was one of the most important temples of the goddess Isis during the reign of Cleopatra, but it also renewed hope for finally finding the lost tomb of the last queen of Egypt. In the beginning of 2017 archaeologists found two big anomalies at the site that suggest underground tombs.

In 2018 *Archaeological Paths* is planning to take their visitors to this closed site to see the latest results of the excavations.

Dr. Kathleen Martínez tells us about her excavation: *"I studied Cleopatra as a historical character for fifteen years and I think I deciphered one of the greatest mysteries: where is the lost tomb of Cleopatra? I placed the tomb at Taposiris Magna. I will tell you why. Cleopatra was the human representation of the goddess Isis. Taposiris Magna was the most important temple dedicated to Isis during the Ptolemaic period and we were able to prove that. If it's so, there is no other place in Egypt that could be the final resting place of Cleopatra than Taposiris Magna."*

There is always something new and exciting to discover in Egypt. In 2018 *Archaeological Paths* will take their tours of Egypt to a whole new level, opening a world of new possibilities to lovers of archaeology and Egypt's heritage. They will make your dreams come true by gaining exclusive access to sites closed to the general public and not possible to see on any other tour. The Valley of the Golden Mummies, Taposiris Magna temple, Abu Rawash and Abu Sir pyramids and many more highlights are waiting for you! *Archaeological Paths*' guests will not only see those sites, but visit them accompanied by legends of Egyptology such as:

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Dr. Mostafa Waziri – Director General of Upper Egypt's Antiquities, Head of Luxor Antiquities Office. *"It will be my honor to explain recent excavation work in Luxor. Some of our new discoveries are already published, and some are not. So it is going to be my turn to explain what we discovered in the last couple of years, last couple of months and even last couple of days. Come and visit Egypt and you will never forget this tour. Come, the lovers of Egypt."*

Dr. Tarek El-Awady – Director of Egyptian Museum in Alexandria; Egyptologist Inspector of excavations in Giza, Saqqara, Abu Sir and the Valley of the Kings. *"I am very happy that Archaeological Paths made it possible for people to come and visit closed sites which are not open for regular tourists – this is an adventure! After such a trip you can say that now you know something about Ancient Egypt and you know about these great people who built this wonderful civilization. If you join us I will tell you about my excavation in Abu Sir pyramids site and also we will talk about the story behind these monuments and the Sun Temples."*

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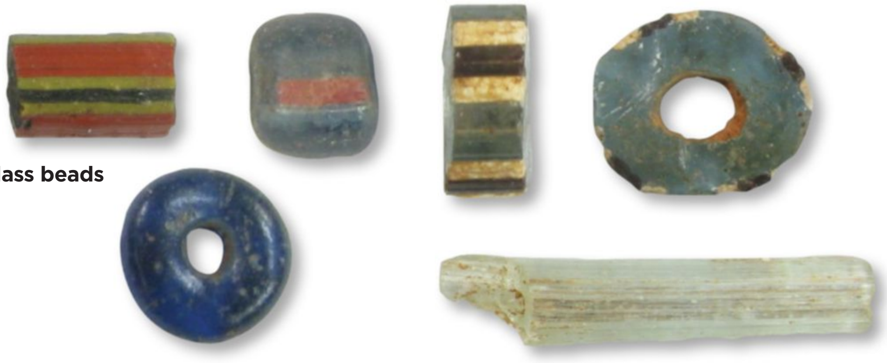


Glass beads

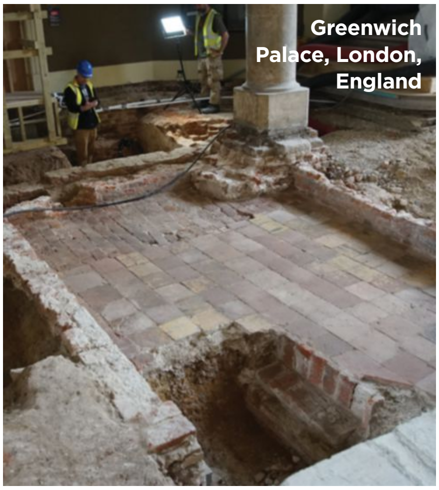
THE GLASS ECONOMY

Researchers working in southwestern Nigeria have uncovered thousands of glass beads, fragments of crucibles, and other evidence of glass production at the site of Igbo Olokun in the ancient Yoruba city of Ile-Ife. Excavators have discovered examples of a type of soda-lime glass that was likely brought to the area by Islamic traders, as well as a much greater number of locally produced glass beads. According to Abidemi Babalola of Harvard University, who led the research, these beads, which the community valued for rituals, healing, and trade, could have been the product of a unique local glass production formula that turned Ile-Ife into a major manufacturing center between the eleventh and fifteenth centuries. “The geology of Ile-Ife certainly supports glass production, which could have inspired local exploration and experimentation,” Babalola explains. “The question is whether dwindling local production necessitated importation, or contact with imported glass inspired the experimentation.”

—Marley Brown

HENRY VIII’S FAVORITE PALACE

Of all the estates and houses available to King Henry VIII, Greenwich Palace in southeast London was known to be his favorite. The king spent more than 4,000 nights there (that’s almost 11 years in total), and he added a number of structures to it, including an armory staffed by metalsmiths from abroad. The palace was largely razed by the end of the seventeenth century, and little sign of it remains aboveground. Recently, however, two of its rooms were unearthed during construction of a visitor center at the Old Royal Naval College, which sits on the palace’s former grounds. “We knew it was quite likely we might find the odd bit of historical Greenwich,” says William Palin, director of conservation at the Old Royal Naval College, “but nothing quite prepared us for the discoveries that were made.” One of the rooms had lead-glazed tiles, and researchers believe it may have been a part of Henry VIII’s armory. The other featured a number of niches thought to have been used as “bee boles,” where hive baskets were kept warm during the winter months.



Greenwich Palace, London, England

—Daniel Weiss

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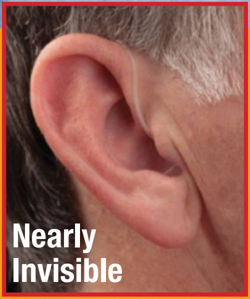

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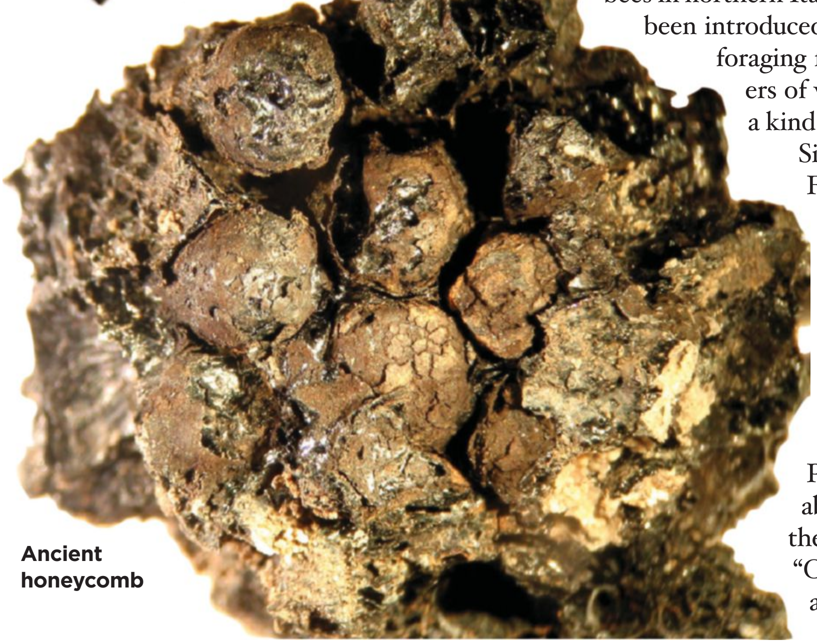
ITINERANT ETRUSCAN BEEKEEPERS

In northern Italy 2,500 years ago, Etruscans developed a unique system of beekeeping to manufacture honey, beeswax, and other products. Archaeologists working at the site of Forcello recently gained rare insight into ancient beekeeping when they uncovered the charred and melted remains of honey, honeycombs, and honeybees in a workshop that had burned down between 510 and 495 B.C. Researchers conducted chemical and palynological (pollen) analyses of the material to determine not only the composition of Etruscan honey, but also what types of plants bees were collecting pollen from two and half millennia ago. While bees in northern Italy today feed abundantly on nonnative plants that have been introduced to the region, during the Etruscan period, bees were foraging from aquatic sources such as water lilies and the flowers of wild grapevines found along shorelines. This produced a kind of grapevine honey that is completely unknown today. Since these plants were not particularly abundant around Forcello, experts believe that Etruscan beekeepers maintained beehives on boats that moved along river courses and took the harvested honeycombs back to their workshops to extract the honey. “We have tried to study the finds and their context from all possible angles and, surprisingly, we ended up having very strong indications of a nomadic form of beekeeping,” says New York University researcher Lorenzo Castellano. In fact, a passage from the first-century A.D. writer Pliny the Elder’s *Natural History* mentions a town only about 12 miles from Forcello, and the historian discusses the movements of the beehives by boats. Says Castellano, “Our finds, which are more than five centuries older, appear to confirm Pliny’s narrative.”

—Jason Urbanus



Ancient honeycomb

SPAIN’S SILVER BOOM

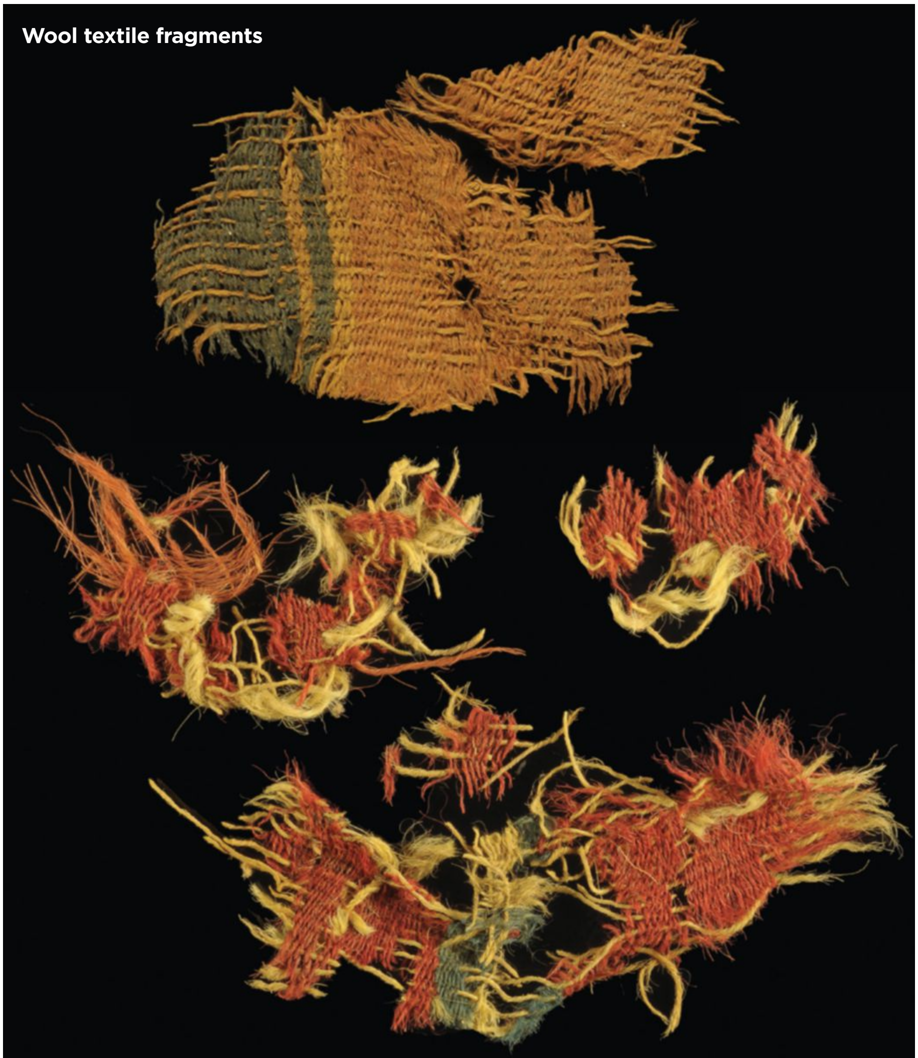
After defeating Hannibal and Carthage in the Second Punic War (218–201 B.C.), Rome found itself the dominant power in the western Mediterranean. While it may seem obvious that Rome’s prospects would rise, having vanquished its chief military, economic, and political rival, a new study led by Katrin Westner of Goethe University suggests that it was the massive influx of Iberian-mined silver into the Roman economy that fueled its unprecedented expansion. Researchers analyzed the elemental composition and lead isotope signature of 70 Roman coins issued between 310 and 101 B.C. in order to determine the source of the silver ore. The results show that in the decades before the Second Punic War, Roman silver originated mostly from Aegean sources and Greek colonies in Magna Graecia. However, coins issued after the war had a different isotope signature, one that closely matched known metal sources from the Iberian Peninsula.

The silver mines of southern Spain were an enormous economic resource once exclusively controlled by Carthage, but which Rome appropriated following its victory. This newly acquired reserve, combined with Carthaginian silver acquired as war booty and indemnities paid by Carthage, brought an extraordinary amount of capital into Rome’s coffers.

—Jason Urbanus

Silver coin

Wool textile fragments



CONSPICUOUS CONSUMPTION

Vividly colored red and blue fragments of wool discovered at a copper mining site in southern Israel's Timna Valley are offering new insights into the social standing of metalworkers who lived in the remote area. The fragments, which have been radiocarbon dated to 3,000 years ago, are the earliest known examples of textiles treated with plant-based dyes in the Levant. But the plants used to make the dyes—the madder plant for red and most likely the woad plant for blue—could not have been grown in the arid Timna Valley. Nor was there enough water available locally to raise the livestock necessary to provide wool or to dye the fabric. The textiles must, therefore, have been produced elsewhere. According to Naama Sukinek of the Israel Antiquities Authority, the discovery suggests that at least some of the metalworkers at Timna had the resources to purchase this imported cloth. Says Sukinek, "Our finding indicates that the society in Timna included an upper class that had access to expensive and prestigious textiles."

—Daniel Weiss

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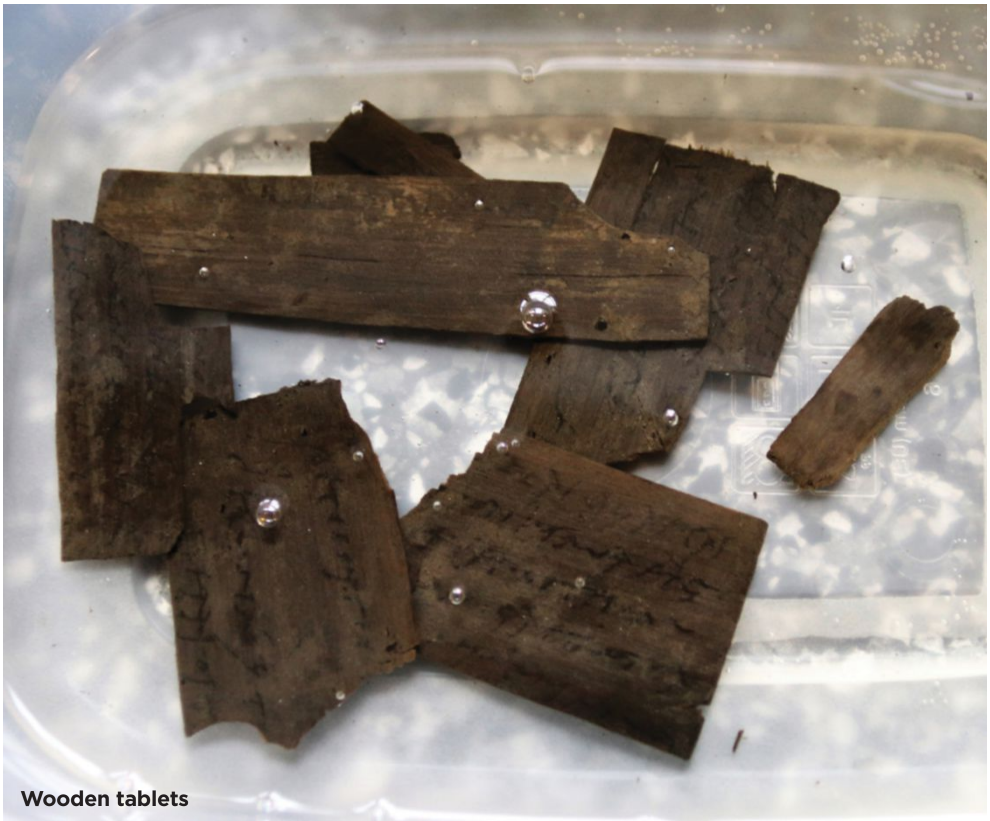
TABLET TIME


Wooden tablets

To discover an artifact with writing on it is unusual—but retrieving more than two dozen in one day is exceptional. “When we found the first tablet, we were very excited,” says Andrew Birley, excavation director at the Roman fort of Vindolanda in northern England. “After the second and third one, we suspected we were in for a very special day.” While digging a cobbled surface outside Vindolanda’s first fort (of a total of nine), Birley uncovered 25 wooden tablets inscribed in ink dating to the end of the first century A.D. “Based on the scatter pattern, we’re dealing with someone walking in a line and the tablets dropping, possibly being blown away from the person holding them,” says Birley. “Perhaps they were being carried to be dumped. Or not—there’s no way to tell.”

More than 2,000 tablets have thus far been unearthed at Vindolanda (“The Wall at the End of the Empire,” May/June 2017). These most recent examples are now undergoing conservation, but one tablet has already started to reveal its secrets. “It’s a request for a leave or holiday by a man called Masclus,” says Birley. “The writing is beautifully clear and in a stunning script. If only I could write like that.”

—Jarrett A. Lobell

BY THE LIGHT OF THE MOON

Hendraburnick Quoit, Cornwall, England

A site in Cornwall known as Hendraburnick Quoit appears to have been host to nighttime rituals starting around 2500 B.C. and continuing for several hundred years. In a recent excavation, researchers led by Andy Jones of the Cornwall Archaeological Unit discovered that a stone at the site contained dozens of circular carvings called cup marks, along with an extensive network of radial lines, all so faint that they are only visible in moonlight or low sunlight, “when the sun casts shadows across the surface of the stone,” says Jones. Previously, just 17 cup marks had been observed on the stone. “We already knew about the most deeply carved cup marks,” he says, “but we only started to be able to see other elements during the excavations later in the day.” Further evidence of activity after dark was provided by the discovery of nearly 2,000 pieces of fragmented quartz, apparently smashed at the site, which would have produced luminescent effects.

—Daniel Weiss

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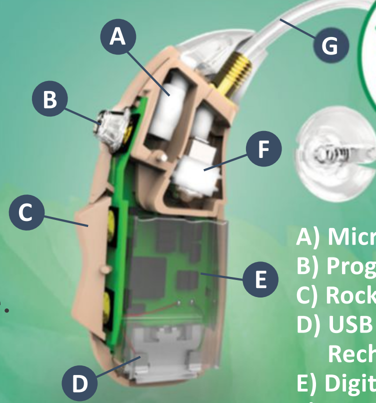

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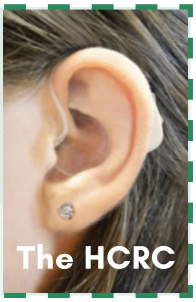

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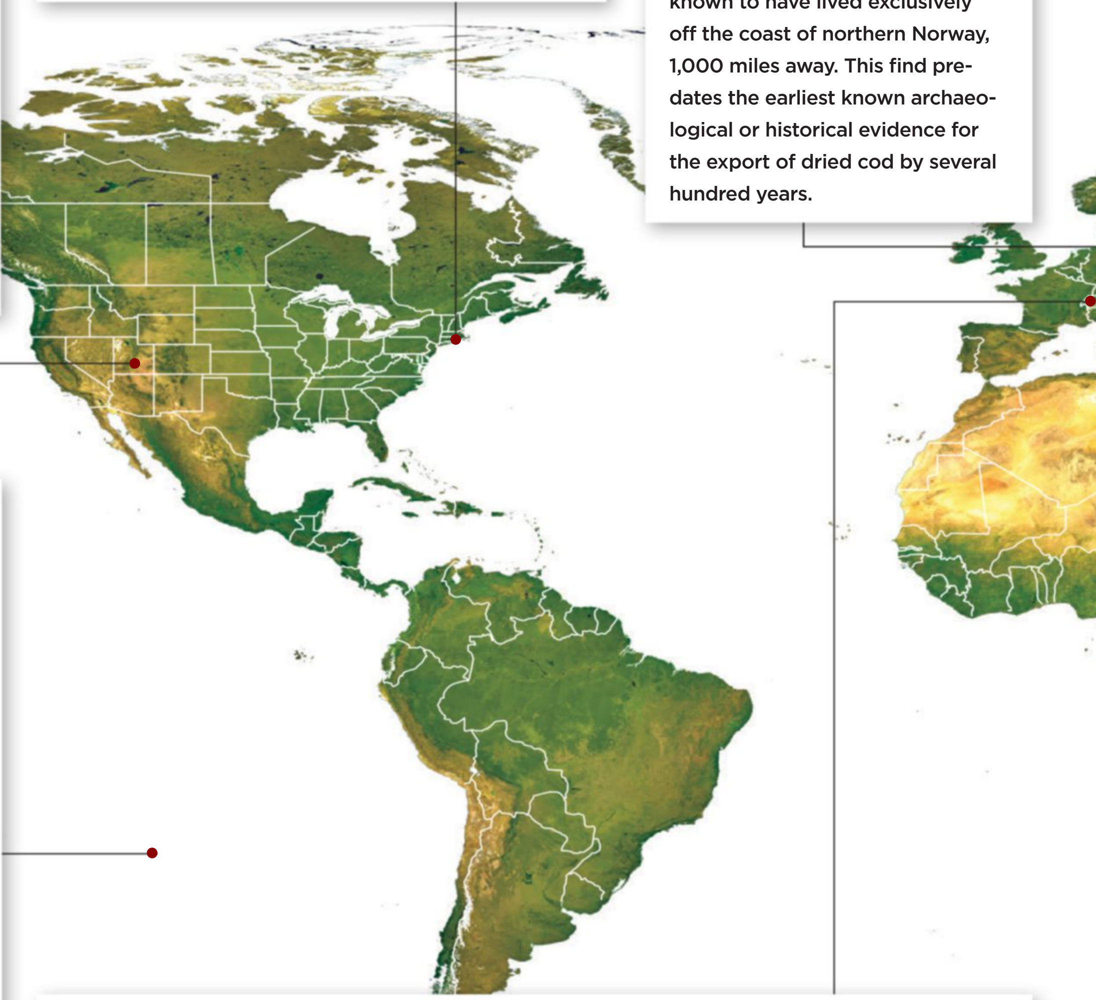
WORLD ROUNDUP BY JASON URBANUS

UTAH: Potato starch residues found on 10,900-year-old stone grinding tools from the North Creek Shelter site may be the oldest known evidence of potato domestication and consumption in North America. The granules belong to a species known as the Four Corners potato, which is native to the southwestern United States, although rare today. In Utah's Escalante Valley, they are found exclusively around archaeological sites, suggesting these tubers were an important part of prehistoric human diets in the area.

RHODE ISLAND: During the War of 1812, naval commander Oliver Hazard Perry was known as the "Hero of Lake Erie." But the year before the war's outbreak, he was captain of USS *Revenge*, which hit a reef and sank off the coast of Westerly. For nearly two centuries, the site of the wreck was unknown, until recreational divers located it a decade ago. Now, U.S. Navy divers have finally raised one of the ship's 1,000-pound cannons. It will undergo laboratory analysis to confirm its provenance.

GERMANY: Today, Norwegian-caught cod is a commodity shipped around the world. Apparently, it was popular some 1,000 years ago, too, when Viking traders transported freeze-dried cod around Europe. DNA testing of fish remains from the Viking Age (800–1066) site of Haithabu indicates that they belonged to an Arctic population known to have lived exclusively off the coast of northern Norway, 1,000 miles away. This find predates the earliest known archaeological or historical evidence for the export of dried cod by several hundred years.



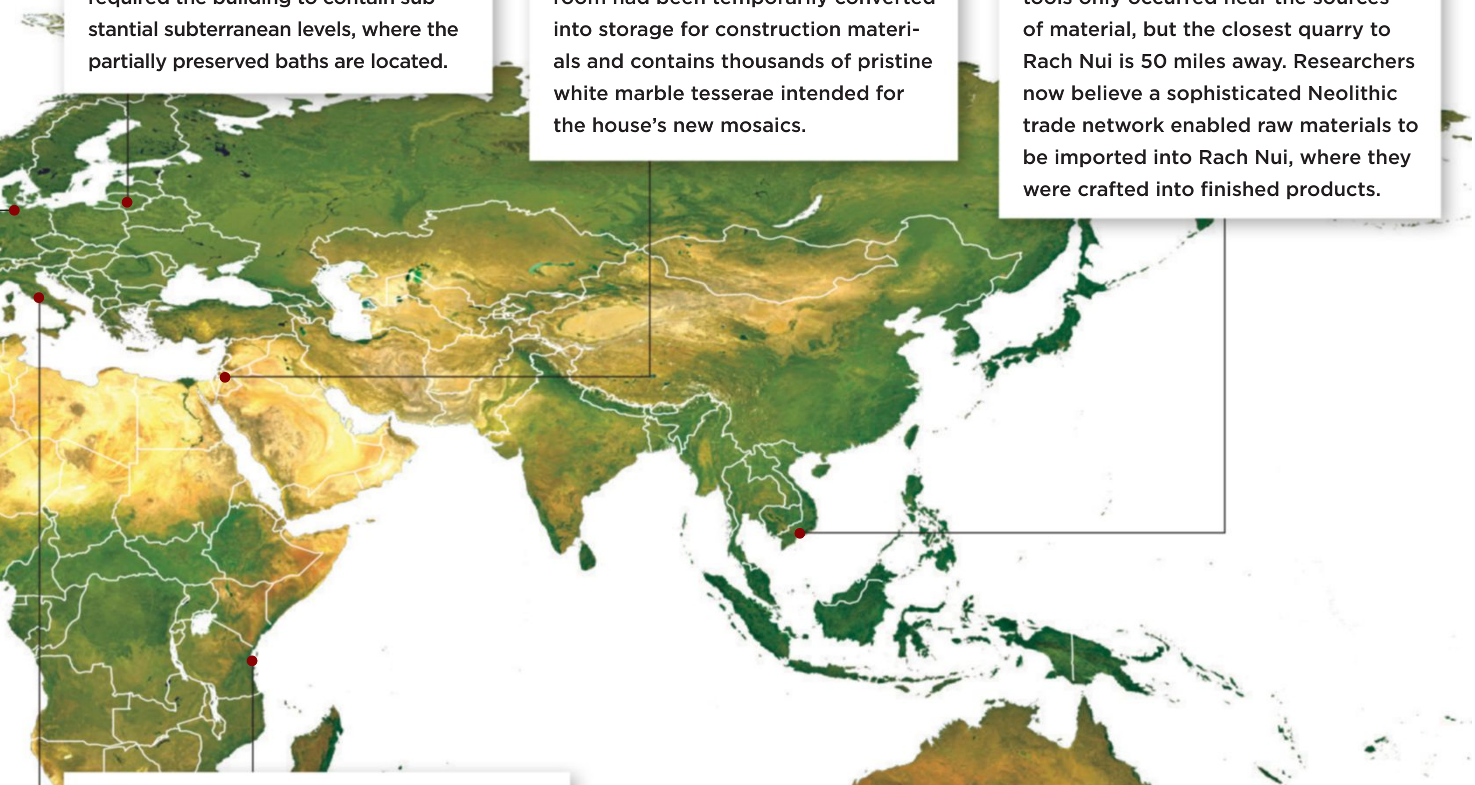
CHILE: The collapse of Rapa Nui's (Easter Island) population is a long-standing mystery, often attributed to the loss of terrestrial food sources and overexploitation of natural resources. However, a new study shows that the islanders were actually able to adapt to the harsh ecological conditions. Analysis of human, faunal, and botanical remains dating to around 1400 indicates that marine sources comprised an unexpectedly large part of the islanders' diet, and that they were also capable of manipulating the nutrient-poor soil to increase its fertility.

SWITZERLAND: A Late Bronze Age traveler hiking high in the Bernese Alps 3,500 years ago seems to have dropped a cereal box, which was eventually buried in the ice. Analysis of the wooden container identified lipids and preserved proteins associated with wheat and rye or barley. Seldom do the biomarkers of plants survive in ancient storage vessels, so, with this new discovery, researchers are hoping to gather valuable information about the early use, cultivation, and spread of cereals in Europe.

LITHUANIA: Two ritual baths once belonging to the Great Synagogue of Vilna have been rediscovered. The massive synagogue complex was completed in 1636 but was looted and burned by the Nazis during World War II and torn down shortly thereafter by Soviet authorities. Because 17th-century laws did not allow the synagogue to be built higher than the city's churches, the demand for space required the building to contain substantial subterranean levels, where the partially preserved baths are located.

JORDAN: In A.D. 749 the city of Jerash was hit by a devastating earthquake. The temblor just happened to strike at a time when the owners of the so-called House of the Tesserae were in the midst of renovations. The property was subsequently abandoned, with work on the house never completed. It has now been discovered that one room had been temporarily converted into storage for construction materials and contains thousands of pristine white marble tesserae intended for the house's new mosaics.

VIETNAM: A grinding stone used to shape, repair, and maintain stone axes attests to the unexpected presence, some 3,500 years ago, of specialized toolmakers at the southern Vietnamese site of Rach Nui. Previously it was thought that the manufacture of stone tools only occurred near the sources of material, but the closest quarry to Rach Nui is 50 miles away. Researchers now believe a sophisticated Neolithic trade network enabled raw materials to be imported into Rach Nui, where they were crafted into finished products.



ZANZIBAR: For the past 1,000 years, African, Arab, and European traders have fought over this island because of its key location along Indian Ocean trade routes. Although it was under the control of the Portuguese during the 15th and 16th centuries, until recently very little evidence of their occupation was apparent. But now, beneath Stone Town's old fortress, archaeologists have unearthed the ruins of a large Portuguese church and the burial of a priest, identifiable by his sacred heart brooch, ring, and small crucifix.

NEW ZEALAND: The remains of a Maori village dating to between 1600 and 1800 were recently uncovered during a road construction project near Papamoa on the country's North Island. Several hundred archaeological features of the settlement were exposed, including crop storage pits, cooking pits, and postholes from several large Maori communal houses known as whares. The discovery is not only providing researchers with new insights into the layout and organization of native communities, but is also revealing aspects of daily life.

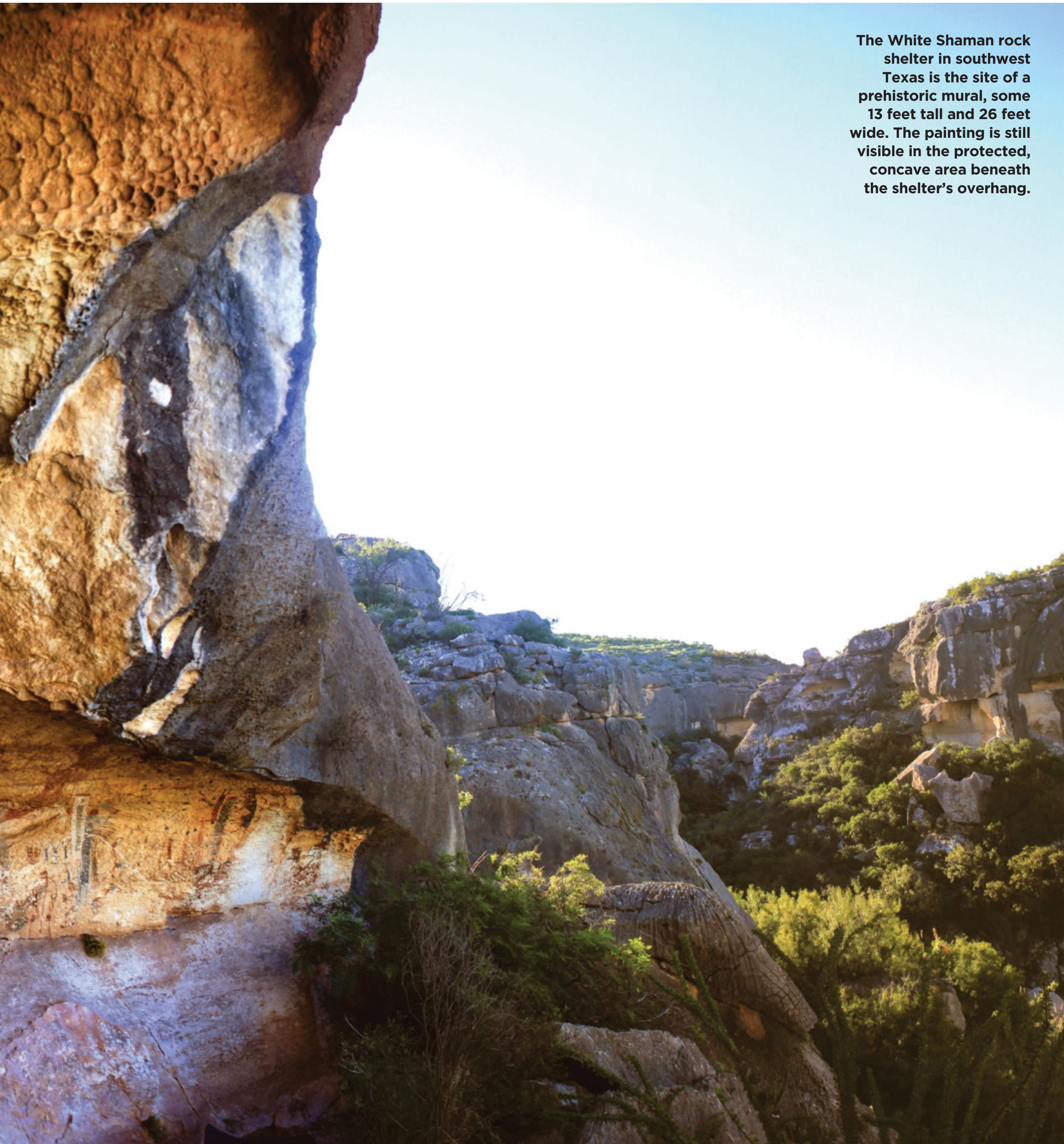
READING THE WHITE

Paintings in a Texas canyon may depict mythic narratives that have endured

by Eric A. Powell

SHAMAN MURAL

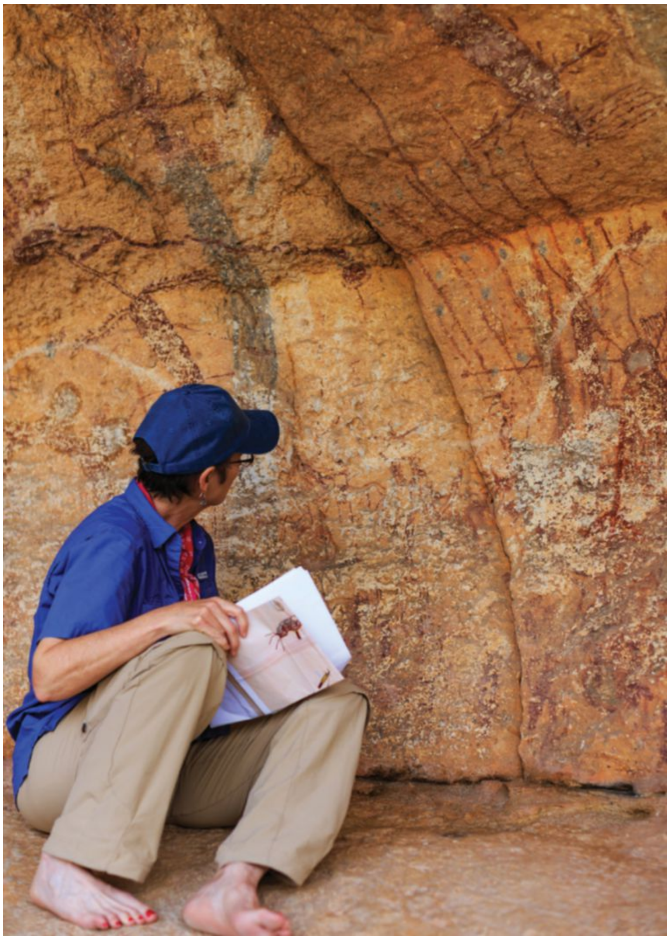
for millennia



The White Shaman rock shelter in southwest Texas is the site of a prehistoric mural, some 13 feet tall and 26 feet wide. The painting is still visible in the protected, concave area beneath the shelter's overhang.

In the Lower Pecos Canyonlands of southwest Texas, a mile upstream from where the Pecos River flows into the Rio Grande, the White Shaman rock shelter is carved into a cliff face at the end of a limestone canyon. Here, in a small alcove, a 26-foot-long collection of pictographs stretches across a smooth wall that faces west. The pigments have faded over time, but a dense profusion of surreal figures, some highly abstract, others seemingly human or animal-like, are still visible. The setting sun can intensify the figures' yellow and red colors, while a full moon illuminates white images, including the elongated headless human figure that gives the site its name. Similar rock art figures, some up to 20 feet high, decorate more than 200 rock shelters within a 90-mile radius around the confluence of the Pecos and the Rio Grande. Hunter-gatherers who lived here from about 2500 B.C. to A.D. 500 created these paintings, which belong to a tradition known today as the Pecos River Style.

These fantastical pictographs have long defied easy interpretation, and many archaeologists have resisted speculating about their meaning at all. Some believe the often bizarre images were made by shamans to recreate hallucinogenic visions they experienced while under the influence of stimulants. In recent years, Texas State University archaeologist Carolyn Boyd, a former professional artist, has proposed that they represent something much more complex. She has put forth the theory that the pictographs at White Shaman, and perhaps other Pecos River Style paintings, record the beliefs of ancient peoples whose ancestors still live in Mexico today. What's more, Boyd is convinced that by using scientific and ethnographic methods, we can begin to understand these narratives. "These are painted texts," says Boyd. "I think we can read them, just as the people who created them must have read them."



Texas State University archaeologist Carolyn Boyd examines details of the painting at White Shaman rock shelter in the Lower Pecos Canyonlands. Originally an artist, Boyd was inspired to become an archaeologist by her exposure to the region's rock art.

Boyd first visited White Shaman in 1989. At the time, she was making a living as a muralist, executing large paintings on commission. When she saw the figures there, she felt a shock of recognition. "I instantly knew that it was a mural," she recalls. Some scholars believe the painting was created over an extended period of time, with multiple people painting unrelated figures. But Boyd felt that couldn't be right. "I could tell at once that it had been planned and conceived as a single composition," says Boyd. "And because I was a muralist, I knew the skill it took to produce something like this, and to do it so beautifully. I was awed."

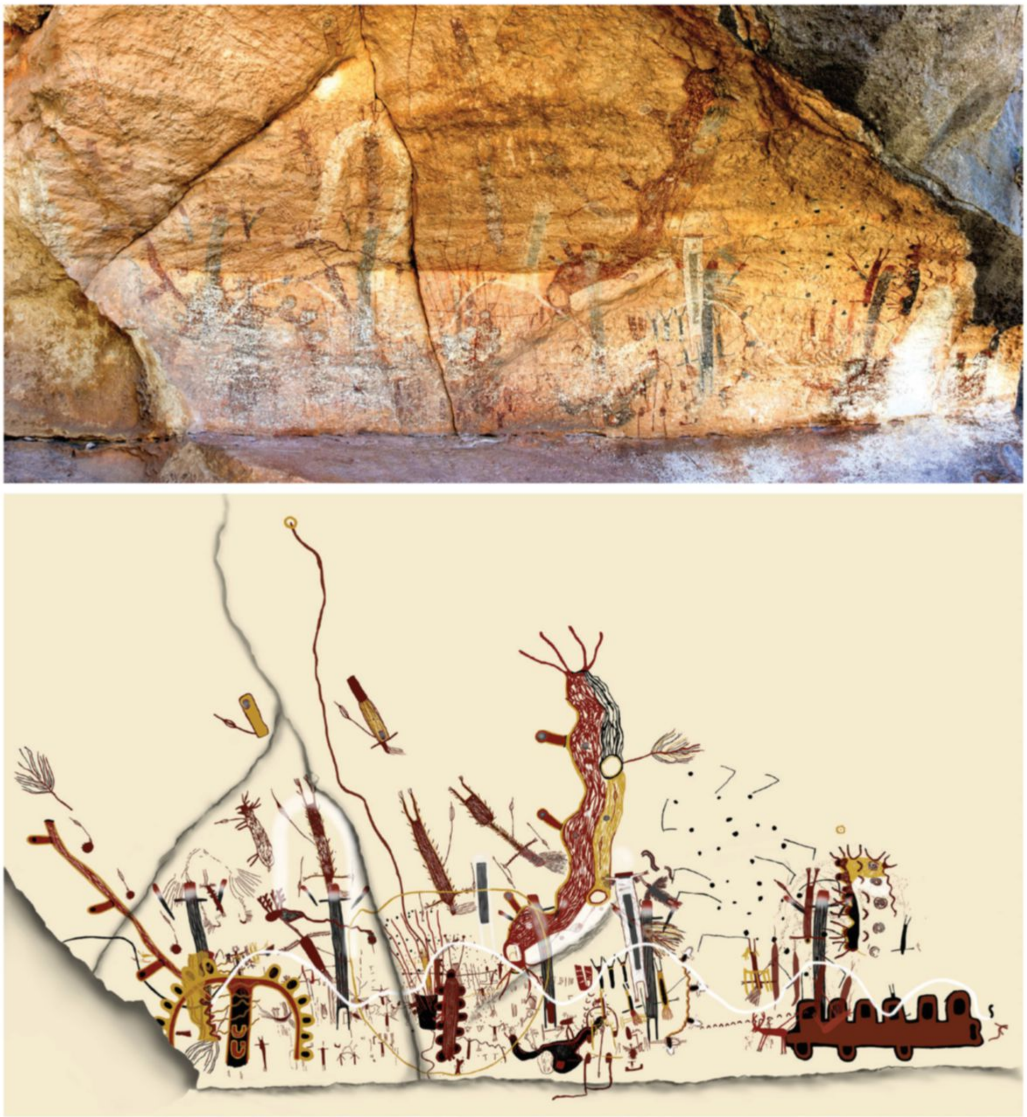
For one thing, it was clear to her that some kind of scaffolding had to have been erected in order to complete some of the pictographs, which can stretch as high as 13 feet. As she made her own renderings of the painting's images, she began to think the work could depict a battle scene of some sort. She suspected that a prominent row of five identical faceless humans with black bodies, topped with red and carrying what appear to be staffs, could represent warriors. But she also knew she was viewing the painting through an artist's eyes. To talk about her ideas with researchers, she was going to need hard evidence. "I was convinced it was a composition, but I also knew that the archaeologists were going to say 'Show me the data,'" says Boyd. The experience inspired her to return to school and pursue a doctorate in archaeology.

Boyd has spent the last three decades studying White Shaman and other Pecos River Style pictograph sites, but archaeologists have been recording and debating these sites since the early twentieth century. "It's such an unusual tradition, really unlike almost any other rock art on Earth," says Witte Museum curator of archaeology Harry Shafer, who has worked in the Lower Pecos since the 1970s. "It's also unusual to have such a dense cluster of these sites, and there are probably more we haven't discovered." The first scholars to interpret the paintings thought they were linked to a hunting cult that ritually consumed mescal beans. Many contemporary Native American groups, such as the Apache, practice rituals involving the beans, and it was thought that the Pecos River Style paintings had been created during similar ceremonies. The idea that they were made by shamans was refined in the 1980s by University of Texas archaeologist Solveig Turpin, who posited that shamans may have produced the paintings during periods of conflict in order to reinforce their claims to leadership. During her long career, Turpin also identified at least 35 more Pecos River Style sites across the Rio Grande in the Mexican state of Coahuila, which is relatively unexplored by archaeologists.

Boyd, for her part, set out to document White Shaman in detail. She also painstakingly recorded four other well-known rock shelters decorated with Pecos River Style rock art, including Rattlesnake Canyon, where pictographs are spread out on a 100-foot-long panel. She hoped to explore the possible meaning behind not just the White Shaman site, but the entire school of Pecos River rock art, and to do it in a way other archaeologists could test. “The good thing about rock art is that, unlike a dirt site, when you study it, you don’t destroy it,” says Boyd. “And other researchers can come back to the site to verify your work.”

In carefully documenting White Shaman, Boyd realized that her initial impression that the painting represented a battle was probably wrong. There were simply too many motifs and figures in the mural for it to make sense as a depiction of a real-world battle. But she knew that the mural’s images were not random, and that at some level it was telling a story. She notes that planning Pecos River Style murals probably took months. The artists would have needed time to gather the minerals, the plants, and the animal fats they used to make their pigments, and a ritual would likely have accompanied each step. Then there was scaffolding to be built. “The effort was immense,” says Boyd. There was no way, she believed, that the scenes depicted could be unrelated to each other.

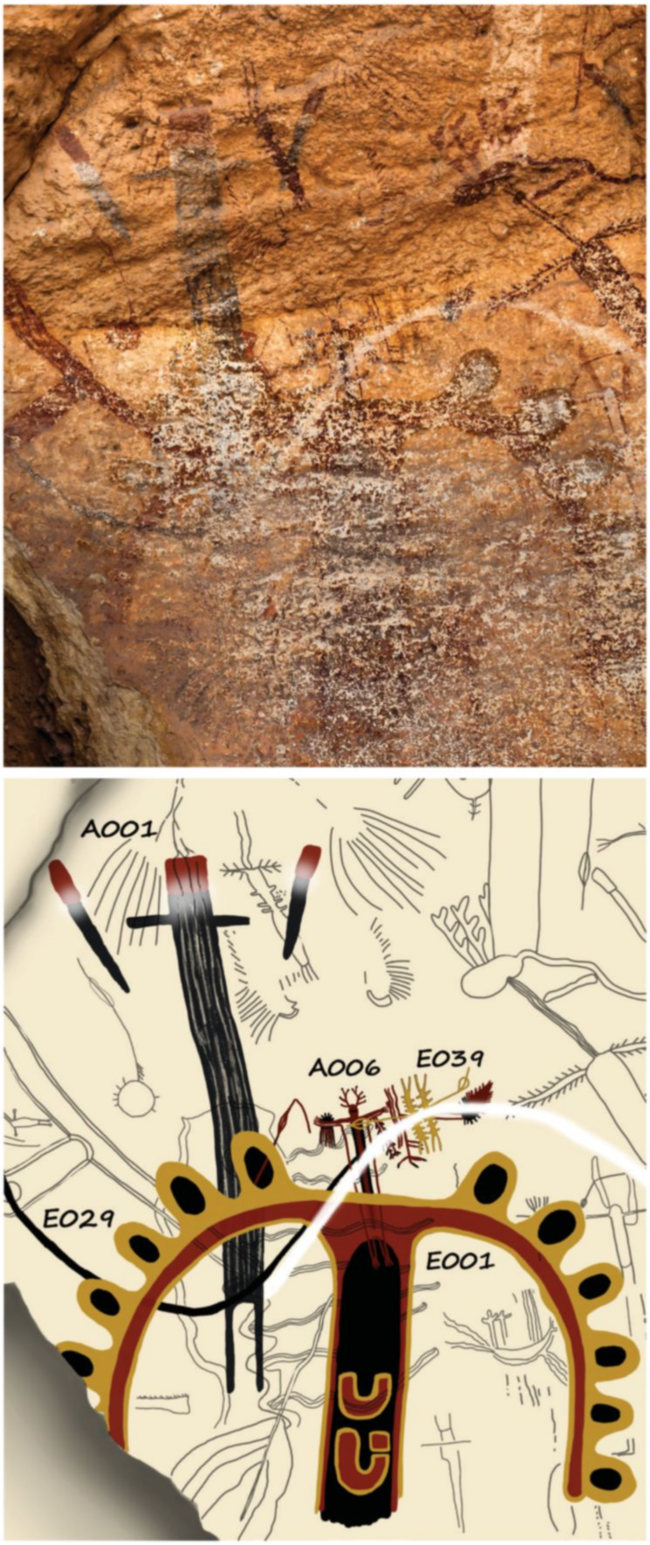
DEPICTING THE BIRTH OF TIME



Boyd created digital renderings (above) of the entire panel (top) at White Shaman. She believes the painting was planned and executed as a single composition depicting key elements of a Mesoamerican creation myth.

She soon noticed that Pecos River Style rock art panels often seemed to be separated into three tiers, sometimes divided by wavy lines. She knew from reading ethnographic accounts that ancient Mesoamerican people conceived of the world as divided into three realms: the underworld, our world, and the world above. Many cultures believed that these worlds could be divided, one from another, by a snake, not unlike the wavy lines she was seeing at Pecos River sites. “The similarities with the Mesoamerican ideas struck me,” says Boyd. “I thought it made a lot of sense to see if there were connections between Pecos River Style motifs and those in the ethnographies.” Boyd found that a curious motif she identified in the White Shaman mural, black-tipped deer antlers, also occurred in the art of the Huichol, a people who live in isolation in the mountains of western Mexico, and whose traditions are thought to have changed little since the arrival of the Spanish, with whom they had minimal contact. The Huichol speak a Uto-Aztecan language, part of a language family also spoken by the Hopi and Utes of the American Southwest and the Nahua, or Aztec, peoples in central Mexico. As she studied Huichol culture, Boyd learned that every year, its shamans make a 600-mile pilgrimage to what they regard as their sacred homeland to gather peyote,

DAWN MOUNTAIN



Elongated black figures, such as the one above, are interpreted by Boyd to be primordial ancestors, of which there are five on the panel. This ancestral figure is painted next to a crenellated arch possibly representing Dawn Mountain, where the world was born and the sun first rose. The small, red, antlered figure rising above the arch could represent a sacred deer.

continuing an ancient practice. Carrying bows and arrows, the pilgrims are metaphorically guided to their destination by deer, which are closely linked to peyote—the Huichol consider peyote and deer a single sacred symbol. They believe that as the sacred deer moves, it creates the peyote in its hoofprints. At the end of their journey, each pilgrim shoots an arrow at a peyote cactus before gathering the disk-shaped buttons, which have hallucinogenic properties. "By shooting the arrow," says Boyd, "the pilgrims metaphorically sacrifice both the peyote and a deer."

At White Shaman, Boyd found that impaled deer with black-tipped antlers were depicted near fringed black dots that were also impaled with spears. These fringed dots, she reasoned, could depict peyote sacrificed during a ritual roughly similar to the one practiced by Huichol pilgrims today. The five black figures who she initially thought were warriors could be depictions of peyote pilgrims. In the 1930s, archaeologists digging in a rock shelter known as Shumla Cave 5 near the White Shaman site found peyote mixed with other plants to form disks that represented peyote buttons. Those artifacts date to 5,700 years ago, so peyote rituals must have had a deep history in the region.

Boyd concluded that the entire painting is a visual set of instructions that communicated how to carry out a peyote ritual. "I knew the mural wasn't just the product of a person in an altered state," she says. "I thought it was a well-ordered document recording an ancient ritual, one that has endured in some form until today."

In 1998, Boyd founded Shumla, a research and education center devoted to the archaeology of the Lower Pecos, in Comstock, a small town a few miles from White Shaman. (The organization's name is officially an acronym for Studying Human Use of Materials, Land, and Art, but is also a reference to the Shumla Caves archaeological sites, which in turn take their name from a nearby ghost town.) With her colleagues, Boyd has developed a method to record Pecos River Style rock art, creating highly accurate digital renderings by relying on many different technologies, including laser mapping and high-resolution panoramic photography. They also use portable X-ray fluorescence to analyze pigments' elemental composition. "These technologies allow us to test what we see with the naked eye," says Boyd. "And often we've found that what we thought about a painting is simply wrong." As she helped develop Shumla's technological expertise and its educational programs, Boyd continued to examine White Shaman, and came to think that the mural was even more meaningful than she had initially suspected. In 2008, the Shumla team began recording the site with their battery of new techniques, and they found a number of previously unseen repetitive designs and patterns. "We got the sense that the mural might be telling a deeper story," says Boyd, "something that went far beyond a depiction of a peyote ritual."

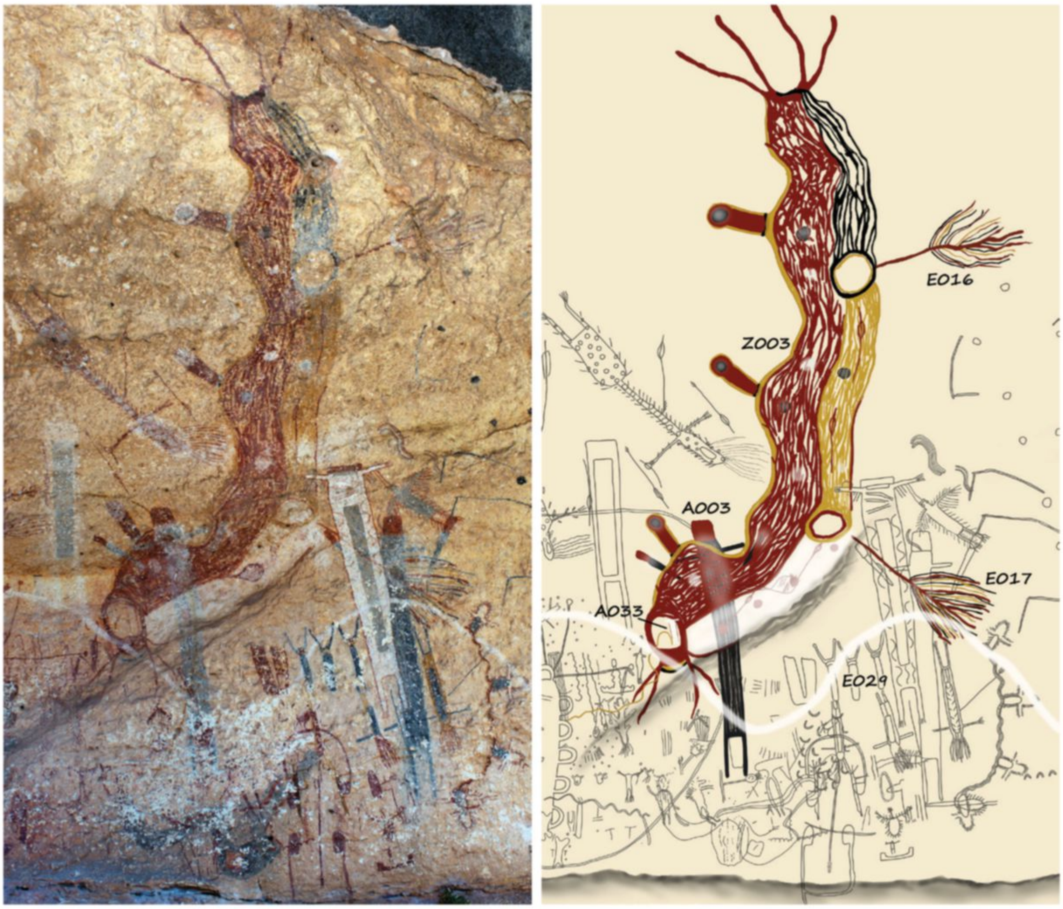
In 2010, while creating a digital rendering of a red human figure with antlers topped with the black peyote symbol, Boyd had an epiphany. "I realized that the black dots had been painted first, which didn't make sense initially. Why paint black dots first and then a red figure connecting them?" Using digital microscopy, the team found that there was a strict stratigraphy to Pecos River Style paintings. In some 98 percent of the pictographs, the different colors were always applied in the same order, with black imagery being laid down first, then red, yellow, and finally, white. "The pictographs have such a deliberate structure," says Boyd. "That tells us without a doubt that they were carefully planned compositions, single murals that conveyed meaning together."

Boyd returned to accounts of Huichol mythology, and soon began making new connections with that culture's different creation stories, as well as with the myths of other groups, especially the ancient Nahua. She found so many similarities in motifs and sacred symbols that she came to believe the rock art at White Shaman depicts a core of archaic beliefs that still survive today. "These people weren't necessarily the ancestors of the Huichol or Nahua," says Boyd, "but I think they shared certain elements of the same ancient Uto-Aztecan belief system."

According to Boyd's careful analysis of each motif at the site, the mural tells several different narratives simultaneously. Read from left to right, the mural seems to tell the story of the birth of the sun and the dawn of time. One of the first motifs she identified as part of this story was a large crenellated arch on the mural's left side. "This is Dawn Mountain," says Boyd, "the primordial arch through which the Huichol and Nahua believe the sun first came into the world." Rising above the arch is the human figure with antlers whose colors she first identified as having a specific stratigraphy. She equates this figure with the sacred deer that was sacrificed to enable the sun's rise in Huichol mythology. The five figures marching across the panel are not just peyote pilgrims, but the five primordial ancestors of Nahua and Huichol myth who were led to Dawn Mountain by the sacred deer. Boyd argues that, rather than staffs, what the figures are holding are torches to help fuel the first sunrise, after which the ancestors were transformed into gods. Fundamentally, she believes the mural depicts an ancient creation myth.

Each of these ancestors is painted next to a unique and elaborate figure. "I think these depict the god that the ancestor became," says Boyd. The central primordial ancestor is painted next to a six-foot-tall half-serpent, half-catfish figure, which could depict the Earth Goddess or mother of all deities. For the Huichol, this goddess is a conflation of a snake and a catfish. It is positioned at the center of the mural, and could be preparing to meet the sun at midday, as the goddess does in Huichol tradition. Close by is an ancestral figure painted next to the headless white figure that gives White Shaman its name. Boyd believes this image depicts the decapitated Moon Goddess, who is associated with the west and the winter solstice in Nahua myth. Another curious figure at the feet of the possible Moon Goddess struck Boyd as significant. "You can clearly see a red depiction of a man in a boat," says Boyd. "In Huichol myth, the Moon Goddess saves a single man from the Great Flood in a canoe." The Huichol today still recreate this mythic watery escape in yarn.

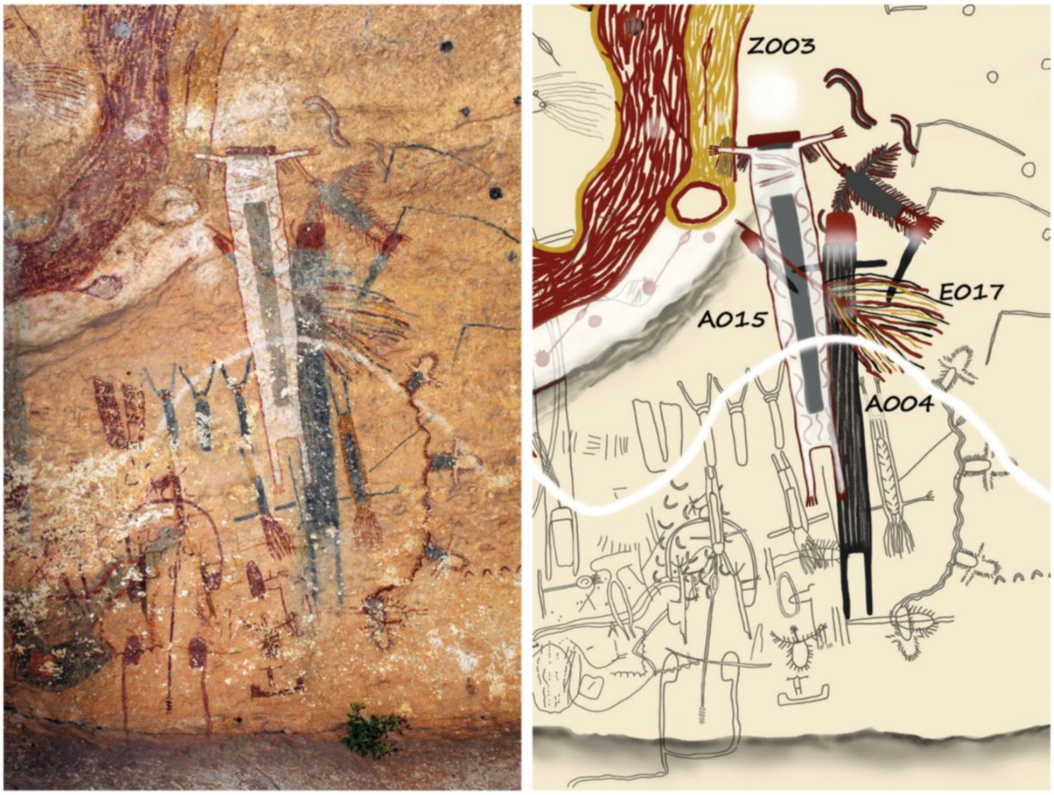
MOTHER GODDESS



A black primordial ancestor is seen being transformed into a massive figure that combines characteristics of a serpent and a catfish. According to some Mesoamerican myths, the Mother Goddess possesses the traits of both of these creatures. A faint, wavy white line runs through all the mural's main motifs and may represent the path of the sun.

On the far right of the mural, the last primordial figure is depicted next to an upside-down humanoid Boyd believes is a solar figure. The two are painted next to a band of black and red with nine bulges. The colors red and black and the number nine are both associated with the underworld in Uto-Aztecan myths, and this could represent the underworld in the west, where the sun sets and humans were believed to have first come into the world. A nearby caterpillar-like figure reinforces this interpretation, since both the Nahua and Huichol linked caterpillars with the underworld and the night. The underworld was also associated with water for the ancient Nahua, and Boyd notes that this section of the mural is on a natural water seep that has leached the paintings of their vibrancy, but whose association with the underworld motif was probably a deliberate strategy. "To me, it's clear that that they recognized this location where water is seeping as the natural place to picture the underworld," says Boyd. A deer is depicted standing next to this feature, and could be another representation of the sacred deer that led the ancestors to Dawn Mountain and was sacrificed to allow the sun to enter the world. A wavy white line that connects all the ancestral beings could represent the path of the sun and the Mesoamerican concept of the Flower Road, a celestial pathway along which the sun, gods, and the ancestral beings are all thought to travel.

MOON GODDESS



The fourth primordial ancestor is associated with the headless white figure that gives the White Shaman rock shelter its name. Boyd believes this figure could represent the Moon Goddess, who is decapitated in some Mesoamerican mythic traditions, and symbolizes the west and the winter solstice.

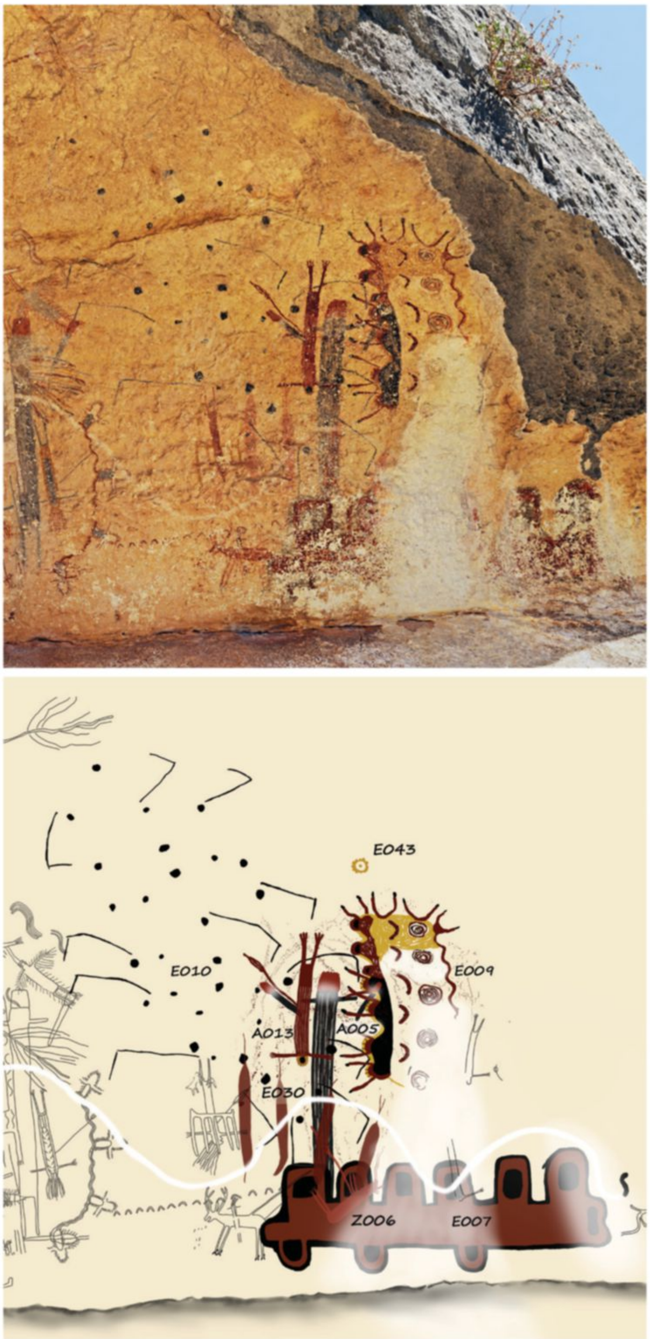
Where other scholars saw a collection of unrelated images, Boyd sees a deliberately crafted master narrative. She thinks that even the sequence the colors were painted in enhances this story. Black was the color of femininity and primordial time, and it was applied first. Then came red, a color associated with masculinity, blood, and the color of the sky just before sunrise. The next color was yellow, associated with the rising sun. Finally, white, the light of midday, which renders the world shadowless, was applied.

"It's a narrative about the creation of time," Boyd says, "but the imagery also depicts the sun's daily cycle and records the changing seasons." She notes that it could even be seen as a metaphor for the transformations each person experiences through the course of life. She believes that the White Shaman mural helped the archaic people who made it understand the world around them on many levels.

A number of archaeologists have embraced Boyd's bold interpretations. "What she's done is impressive," says Shafer. "There's no question it is rigorous and grounded in good ethnography and good archaeology." Texas Tech art historian Carolyn Tate, who is an authority on Olmec art, also thinks the connections Boyd has identified between the Pecos River Style and Mesoamerican traditions are provocative, even if not yet conclusive. She says, "Some of the motifs she's identified—such as the crenellated arch—these are visual patterns you see in Nahua manuscripts." Tate thinks it will take further research to solidify the connections between the Pecos River sites and Mesoamerican beliefs, but credits Boyd with making her and her colleagues aware of a tradition that wasn't on their radar. "This style is the oldest large group of pictographs in the New World and it's been overlooked by Mesoamericanists. She's making us pay attention to the idea that this could be the northern frontier of Mesoamerica." Tate also notes that Boyd's methods of recording the murals will have a major impact on the field: "Just the technology itself will lead to a new era of rock art studies."

Some researchers have raised doubts about Boyd's interpretations, pointing out that she is linking myths and motifs that could be separated by thousands of years. Others question the

UNDERWORLD



An ancestral figure that appears at the farthest right portion of the panel is transformed into a red figure with its feet in the air. Boyd thinks it may represent the setting sun, and day's end. A caterpillar behind them represents nighttime, and the red and black object beneath them all may stand for the underworld.

assertion that each of these motifs could have astronomical significance. Boyd says, "There's this idea that hunter-gatherers wouldn't have been so concerned with celestial events and tracking the seasons, but that's just not true." She remarks that even though they had no crops to harvest, hunter-gatherers' lives were also deeply impacted by the changing seasons, which they would have had to carefully observe. "They would have been just as concerned as agricultural peoples. Time is written into the White Shaman mural."

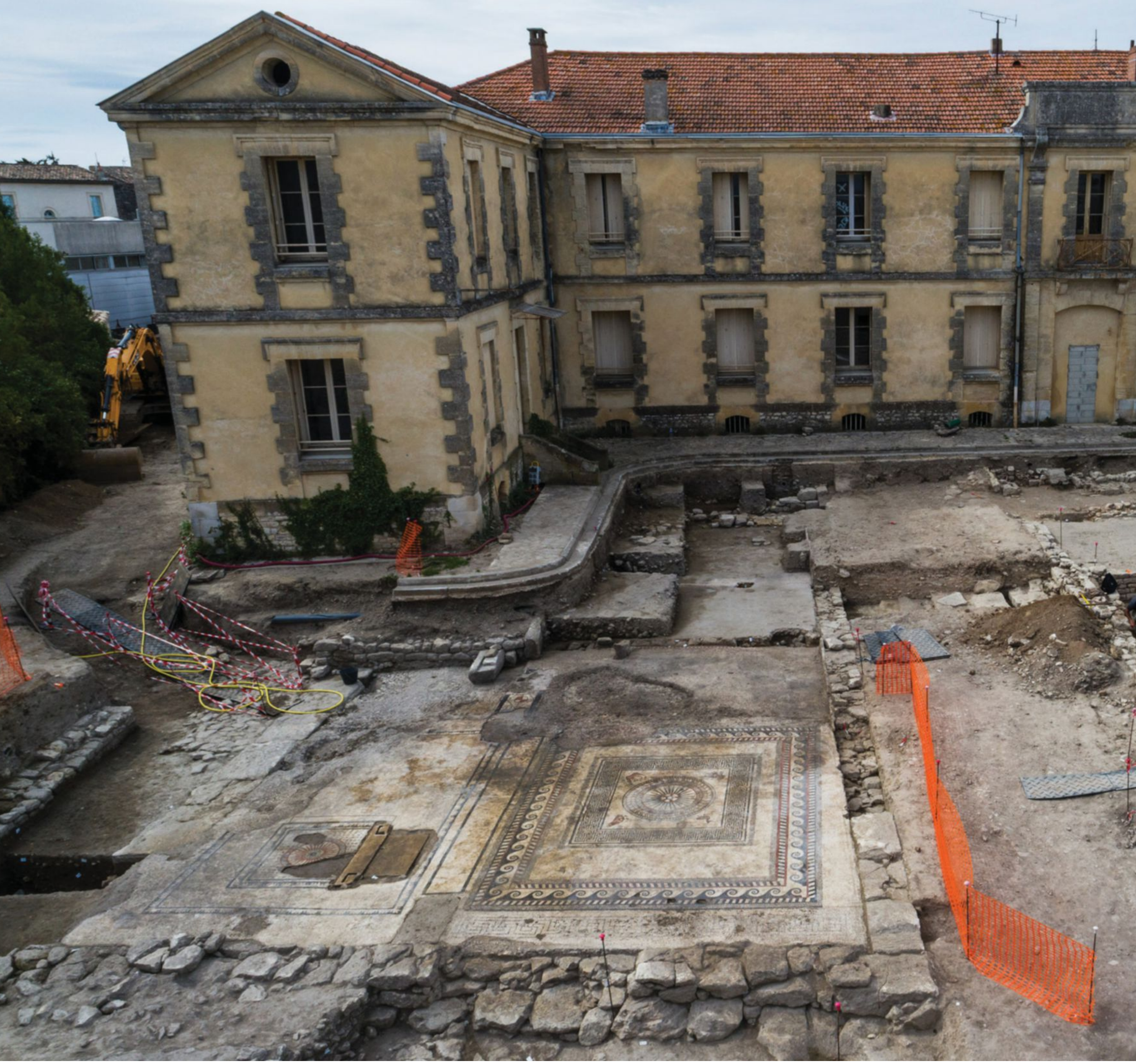
This year, Shumla began the Alexandria Project, an effort to record every single rock art site in the region in as much detail as White Shaman. Its name reflects Boyd's deep belief that these murals are texts, analogous to the books once housed in the Library of Alexandria. Like the volumes in that ill-fated library, many of the sites are threatened, whether by fluctuating water levels or vandalism. "It is urgent that we make as complete a record as we can, now," says Boyd. As a case in point, Shumla just completed an exhaustive survey of Rattlesnake Canyon, the future of which is bleak due its location on a reservoir whose rising waters are threatening to erode away the site's pictographs.

Research director and archaeochemist Karen Steelman is overseeing the effort, and she has set up a new Shumla lab that will allow the team to use a process known as plasma oxidation to extract organic carbon from minute paint samples, which can then be radiocarbon dated. Steelman is developing a comprehensive plan to radiocarbon date as many of the pictographs as possible. "Ideally, this project will give us the chance to date a large number of Pecos River rock art sites," says Steelman, who notes that previous radiocarbon dating has largely been limited to endangered pictographs, which could be skewing how archaeologists understand the development of the tradition. "This should allow us to see patterns," says Steelman, "and help us understand how the art changed and evolved through time."

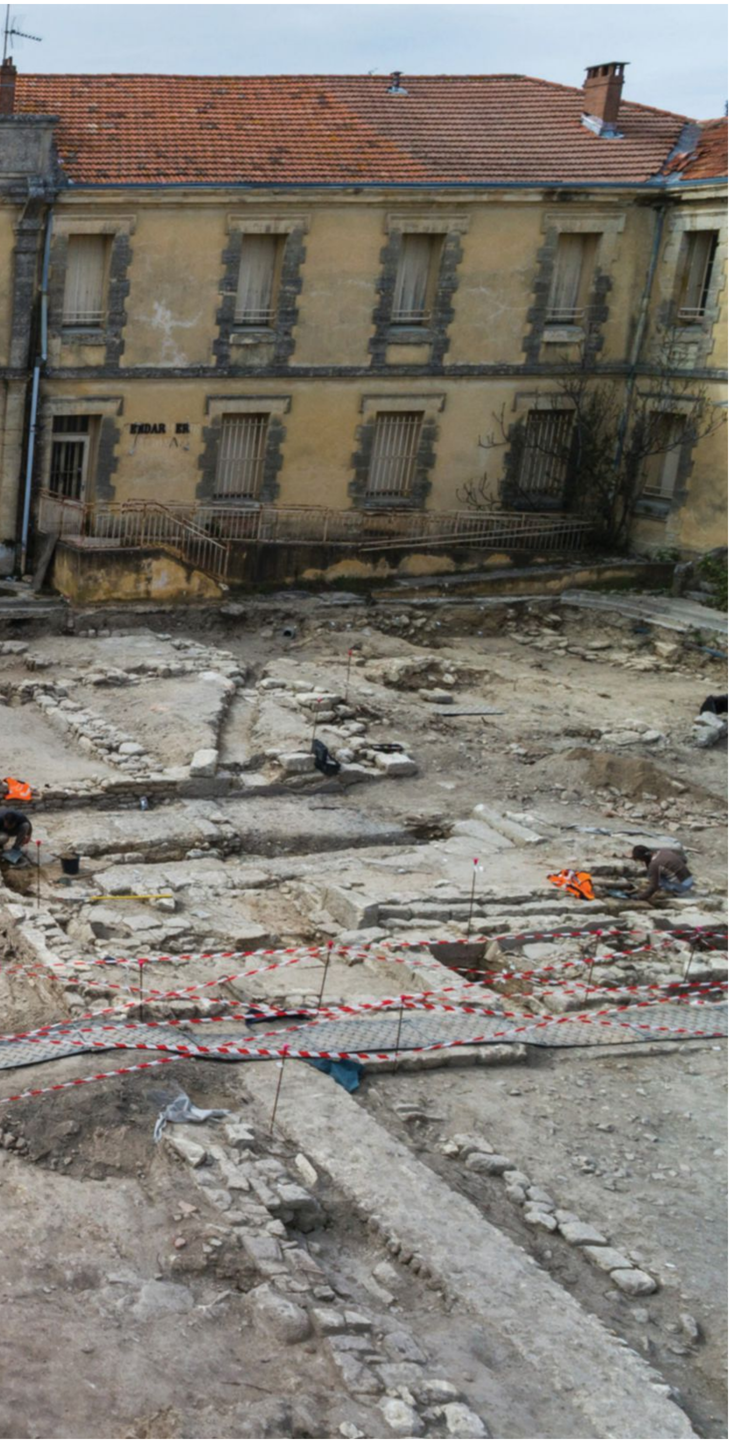
Researcher Amanda Castañeda uses a portable X-ray fluorescence device to test the composition of the mural at the White Shaman rock shelter. She is part of a team that is working to document all rock art in the Lower Pecos region.

While Boyd is no longer actively overseeing Shumla's fieldwork, she is still heavily involved in its efforts, and cannot stop thinking about White Shaman. "I am continuing to learn more and more about this mural," she says. "Every time I come back to it I see something new." She also says that it is high time for her to shift her focus to other sites, such as Rattlesnake Canyon, in hopes that she can unlock their narratives and add to the stories told by White Shaman. ■

Eric A. Powell *is deputy editor at* **ARCHAEOLOGY.**



EVOLUTION OF



A TOWN

The beginnings of a Roman settlement in southern Gaul

by Marley Brown

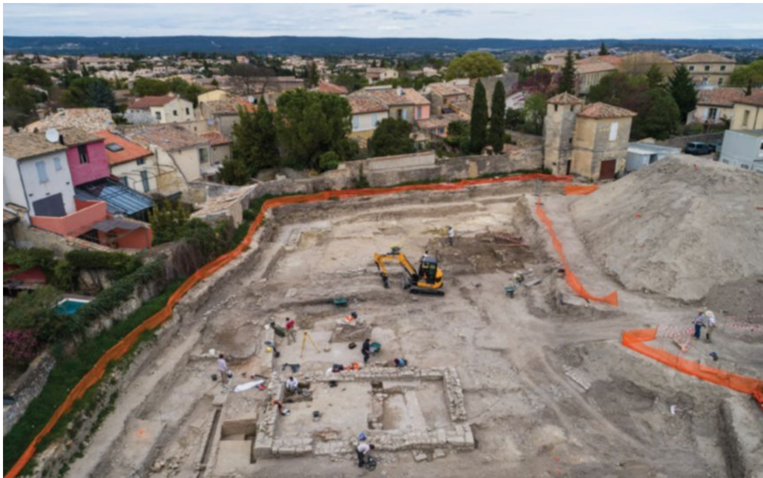
WORKING IN ADVANCE of construction on a high school dormitory in the town of Uzès in southern France, archaeologists have discovered, at the town's periphery, the remains of an early Roman settlement named Ucetia dating to the first century B.C. Researchers have found evidence there of both Celtic and Roman dwellings. Located in an arid region close to the Mediterranean, Ucetia was previously only known from an inscription on a stela in the nearby city of Nîmes.

Today, visitors flock to the famed market villages of Le Gard, a district within southern France's Occitanie region. Uzès is one of them. Until 2017, however, the location of Ucetia, which gave Uzès its name, remained an enigma. The town was thought to perhaps have been destroyed or obscured by later building throughout the centuries. In an excavation that covers several acres, archaeologists from the French National Institute of Preventive Archaeological Research (INRAP), have now identified Ucetia just north of and outside Uzès' medieval walls. They have unearthed an urban footprint that dates back to before the Roman invasion of Gaul in the first century B.C. and extends into the early Middle Ages. The site's fortuitous location outside the main walls of the modern town is giving scholars an opportunity to trace the early phases of Roman urbanization in the region, at a slight remove from the town's later development.

Greg Woolf, director of the Institute of Classical Studies at the University of London, explains that many towns evolved through the millennia from Roman cores into modern urban centers, but Ucetia's location partly outside modern Uzès is unique. "It is good to have more information about that first generation of Roman towns in Gaul, most of which are obscured by more substantial structures built on top of them," he says. "The fact that Uzès was apparently so quickly surpassed by Nîmes makes it an important witness to those first stages of Gallo-Roman urbanism."

Those first stages begin in southern Gaul around 125

In southern France, just outside the walls of the ancient town of Uzès, archaeologists have discovered mosaics (left) and other evidence of the original Roman settlement called Ucetia. The modern town can be seen (below) sprawling to the south of the site.



The remains of Roman infrastructure, such as streets, curbs and drains (above) are examples of the empire's initial and lasting urban planning efforts in the town of Ucetia.

B.C., when Roman forces arrived to aid in the defense of the coastal Greek trading colony Massilia, now Marseille, whose residents feared encroachment from hostile tribes to the north. Rome subsequently founded Narbo Martius, now Narbonne, about 100 miles southwest of Uzès in 118 B.C. Julius Caesar completed the Roman conquest of the rest of Gaul nearly 70 years later.

The people living in Gaul when the Romans arrived belonged to several Celtic tribes that shared cultural and linguistic qualities. They were mostly ruled by warrior nobles, whose status derived from their wealth and ability to protect vassals, and druids, who wielded power through religious and legal authority. It is difficult from archaeological data alone to determine just how quickly local Celtic communities adopted Roman customs or technology, but evidence from Ucetia suggests that the area made a gradual transition from a sort of Celtic hamlet to a Roman town. "The oldest vestiges of the site date from before the conquest of Gaul, perhaps at the beginning of the first century B.C.," says Philippe Cayn, INRAP's lead archaeologist on the project. "People settled here and used local limestone to build houses and, possibly, pave streets."

For those familiar with the common image of Celts living in roundhouses and hillforts, Woolf explains that Iron Age architecture in southern Gaul was actually more like that found elsewhere in the Mediterranean. "The house of the Mediterranean Iron Age makes much more use of dry-stone walls and much less of timber, and there are none of those vast 500-acre-plus settlements you find in the continental interior. Many people lived in small settlements perched over little patches of soil that they could farm," he says. "It is a bit of a generalization, but I'd expect houses in regions like the one Uzès is in to have stone walls and beaten clay floors."

THE ARCHAEOLOGICAL EVIDENCE that INRAP has uncovered at Ucetia bears this out, suggesting that it began as a small pre-Roman settlement and was gradually built up over time with more and more Roman-style buildings. One such structure is an 800-square-foot urban house in which archaeologists have found mosaics that are older than most others found in the region.

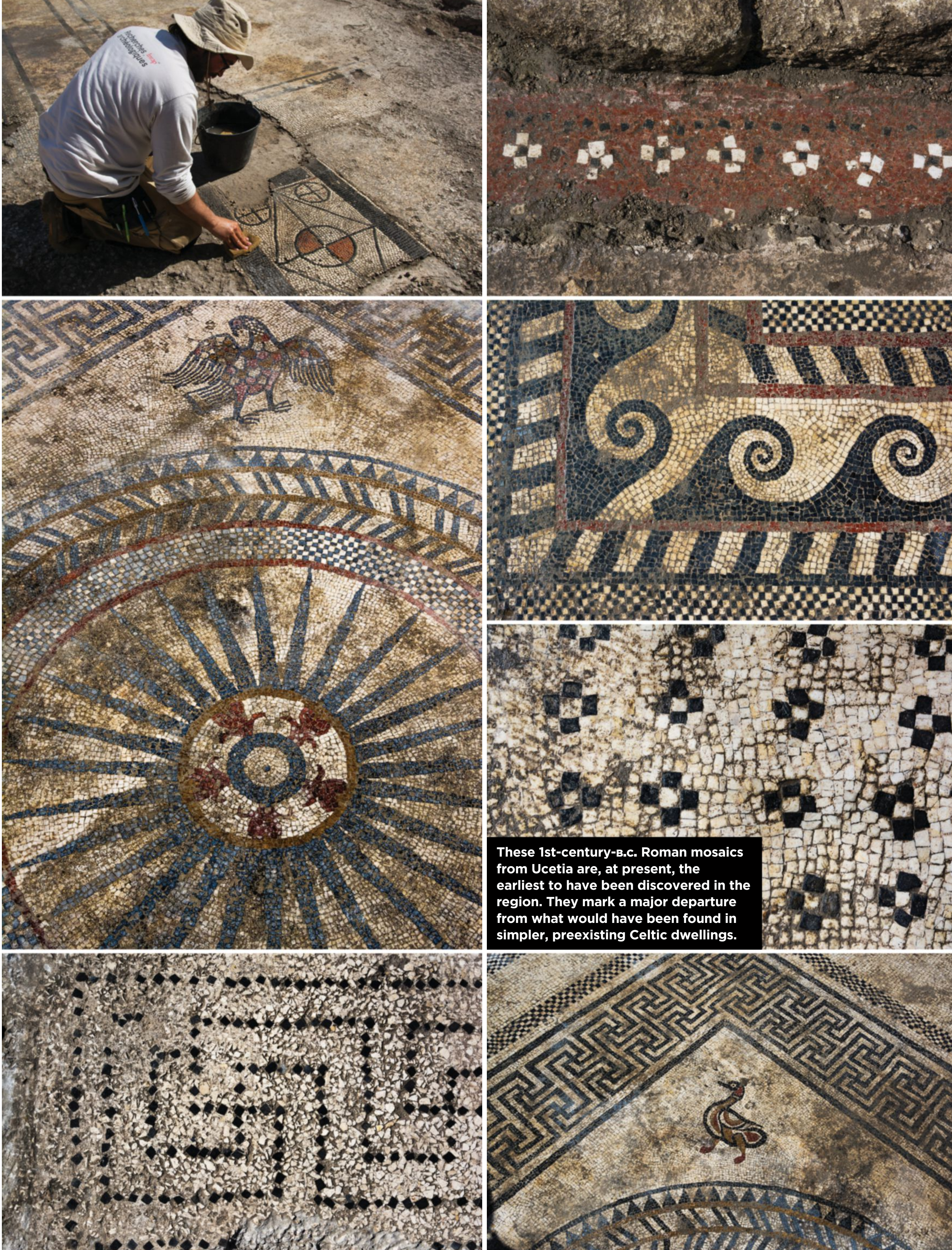
The mosaics appear to have been created during Ucetia's earliest years, when the Romans first began to build upon the stone houses already in place, lay out the first streets, and to draw up neighborhoods.

"The age and quality of the mosaics are surprising," says Cayn. "They date from the first century B.C. At that time, there are only a few such examples found in Gaul. In Nîmes, the most important town in the province, this type of mosaic only seems to appear about a hundred years later."

According to Cayn, the stylized motifs of an eagle, a fawn, an owl, and a duck may represent animals associated with various deities. One mosaic also includes a short inscription in Greek. "It reads 'Lucius Cornelius,' which may refer to the owner or the craftsman who made the decoration," Cayn says. "That it is a Roman name written in Greek testifies to cultural exchanges. Was this a Greek who had come to settle in Uzès?"

The bit of luck that has the remains of Ucetia sitting slightly outside modern Uzès is possibly due to two mysterious periods when the site was abandoned by its inhabitants, once from the third to the fourth centuries, and again in the early Middle Ages, when the population decamped to the current center of Uzès. According to Cayn, it is difficult to explain the desertions of the site, and the archaeological dates are not precise enough to tie either one to any specific historical, political, or economic event. He speculates, though, that the abandonments could correspond to the emergence of other nearby cities. The exact reason that its citizens, in effect, moved Uzès slightly to the south of its original location might never be known. But their decision offers a singularly unencumbered view of an ancient settlement's transformation. ■

Marley Brown *is associate editor at* ARCHAEOLOGY.



These 1st-century-B.C. Roman mosaics from Ucetia are, at present, the earliest to have been discovered in the region. They mark a major departure from what would have been found in simpler, preexisting Celtic dwellings.

MAROONED IN RUSSIAN AMERICA

Two centuries after a ship sank off an Alaskan island, the fate of those who survived has now been uncovered

by Daniel Weiss

In late July 2016, a small group of people assembled on a narrow terrace near the shore of southeastern Alaska's Kruzof Island. Among them were archaeologists from the United States, Russia, and Canada, as well as representatives of the Sitka Tribe of Alaska and the Russian Orthodox Church. They were gathered to remember those who had perished more than 200 years earlier when a Russian ship called *Neva* sank in stormy waters off the island's west coast. The archaeologists had uncovered evidence—including what they believed to be the grave of one of the wreck's victims, a Russian nobleman who had been on his way to assume an important managerial position in nearby Sitka—that the wreck's survivors had made a camp on the terrace after washing ashore. Chuck Miller of the Sitka Tribe performed a traditional Tlingit drum ceremony, and deacon Herman Madsen gave a Russian Orthodox blessing. Despite the church and the Alaska Natives having been virulent enemies when the ship sank, their representatives were now united in offering prayers for those who died when it went down.

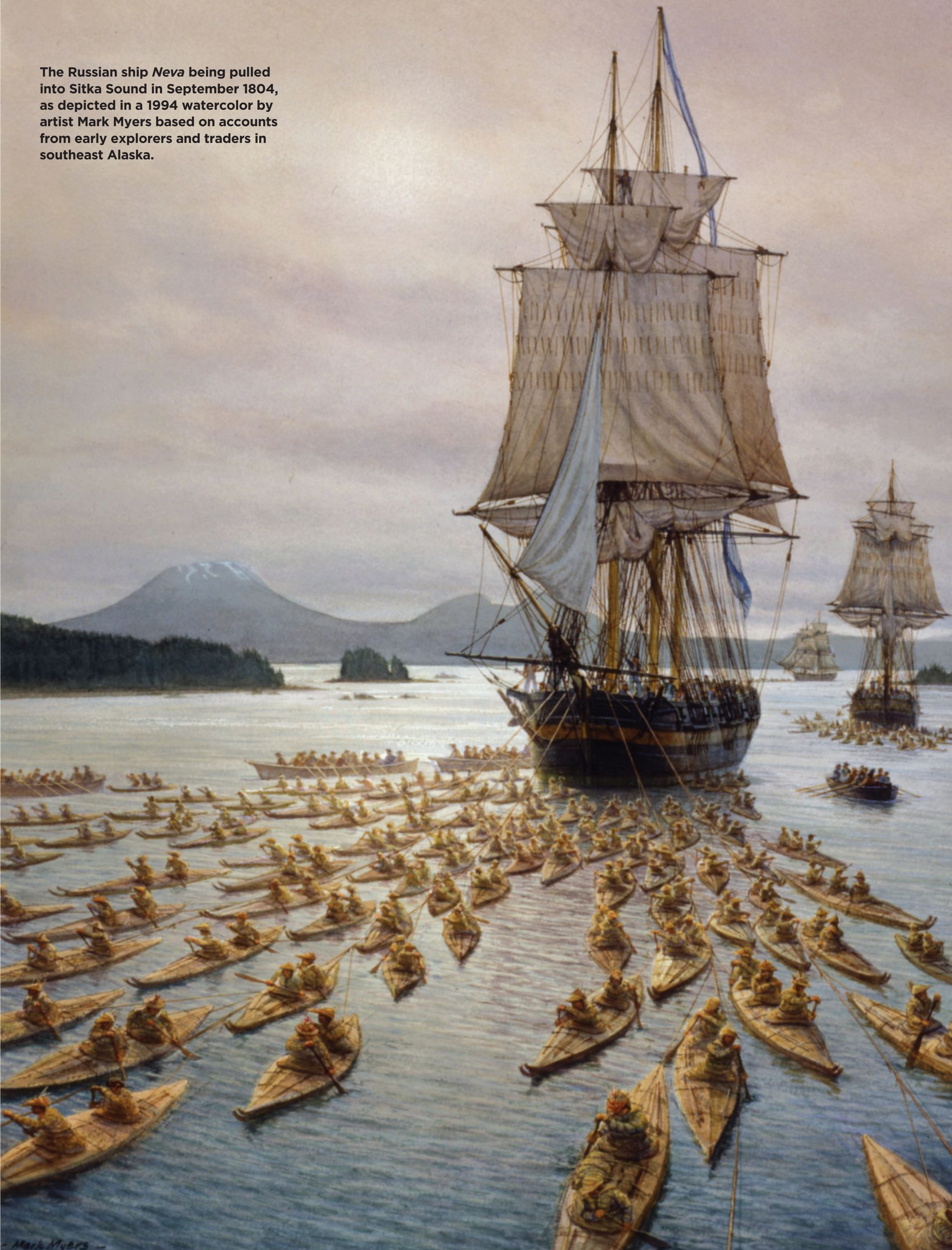
In its brief career, *Neva* became one of the most celebrated ships in Russian history. The 372-ton frigate was built in London and launched in 1800 as *Thames*. It was purchased by the Russians in 1803 and renamed. Outfitted with 14 cannons and sheathed in copper to weather a long-distance journey, *Neva* and its sister ship, *Nadezhda*—also purchased from Britain—set out from the port of Kronstadt, near Saint Petersburg, in the summer of 1803. *Neva* spent the next three years navigating the globe, establishing a storied reputation in its home country.

During this trip, *Neva* stopped off in Alaska, with which it would come to be indelibly associated as a result of events that unfolded over the next decade. At the time, Alaska was a colony that was part of Russian America, which also included holdings in California and Hawaii. The territory was governed by the Russian-American Company, an outfit chartered by the Russian czar Paul I and given exclusive rights to the fur trade in the area. *Neva* arrived in the summer of 1804, at a pivotal moment for the company, which was engaged in an ongoing, bloody fight with the Tlingit people, who are native to the southeastern Alaska panhandle. The company had made two attempts to establish a fort in the area—first in 1799 and again in 1802—but the Tlingit had run them out each time, more recently from Sitka, where the Russians had a fort and settlement called New Archangel.

In late September 1804, the company's chief manager and governor of Russian America, Alexander Baranov, used *Neva*'s cannon power to gain a decisive edge over the Tlingit. "It was probably the largest ship to ever sail into Sitka Sound," says Daniel Thompson, a historical archaeologist based in Alaska. "It must have been an imposing sight for the local folks to see this symbol of Russian might being towed in by *baidarkas* [two-hulled kayaks] to get in close enough to shore to bombard the fort." The Battle of Sitka was soon over, and the surviving Tlingit escaped into the forests surrounding the fort. According to Thompson, the battle marked a turning point after which the Russians maintained control of the area until Alaska was sold to the United States in 1867.

After spending another year in Alaska, *Neva* carried a load of sea otter furs and sealskins to southern China, and then sailed with *Nadezhda* back to Saint Petersburg via the Cape of Good Hope. On a subsequent voyage, it became the first Russian ship to visit Australia, and from 1807 on it was in the service of the Russian-American Company, ferrying goods and

The Russian ship *Neva* being pulled into Sitka Sound in September 1804, as depicted in a 1994 watercolor by artist Mark Myers based on accounts from early explorers and traders in southeast Alaska.



personnel back and forth from Alaska to Siberia. Even today, *Neva* is renowned in its home country. "In Russia, it's a point of pride and is known much like Magellan's first ship," says Thompson. The Tlingit, however, have much darker memories of the vessel. Many of their elders still carry hard feelings about *Neva*, says Bob Sam, a tribal council member of the Sitka Tribe of Alaska, which includes the Tlingit. "You could say the *Neva* was seen as a doomed ship because of that battle."

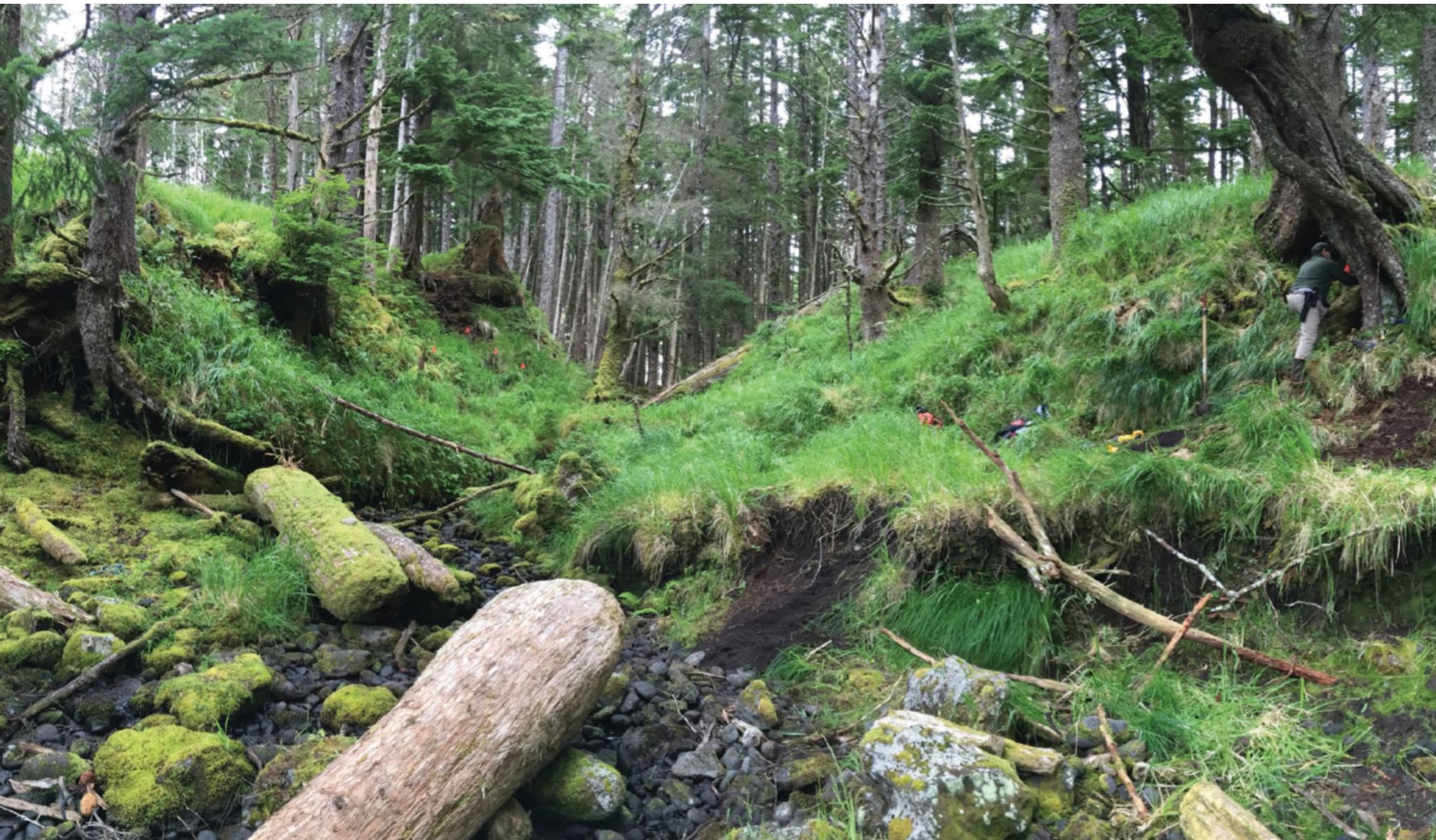
NEVA'S FINAL VOYAGE, which was later the subject of several published accounts based on descriptions by those who took part in it, certainly did seem to be plagued from the start. Departure from Okhotsk in Siberia was delayed until late August 1812 as the Russian government considered sending *Neva* on a diplomatic mission to Japan before deciding instead that it should head to Alaska. On board was Tertii Stepanovich Bornovolokov, a nobleman designated to replace Baranov as the Russian-American Company's chief manager. Before the ship departed, however, a skiff carrying an inspection party overturned, and 13 people, including *Neva*'s new captain, drowned.

Iakov Podushkin, a fleet lieutenant in the Russian Navy, was given command, but he and his chief navigator, Daniil Kalinin, soon began to clash. Podushkin charted a course that would take the ship northeast along the Aleutian Islands and then southeast along the Alaska coast to Sitka, hugging land the entire way. Kalinin pointed out that they were likely to meet headwinds and possibly storms along the Aleutians and argued instead for taking the more typical open-sea route that involved heading straight east across the North Pacific.

Podushkin won out, but Kalinin had been right: Sure enough, *Neva* was hit by a massive storm in the Aleutians, breaking part of its mast and tearing several of its sails. Demoralized and ill, Podushkin gave up control of the ship, and Kalinin took over. He sought refuge in Resurrection Harbor, on the south coast of Alaska, where the ship was able to make repairs. Over the objections of Podushkin and some others, who wanted to wait there until spring, Kalinin insisted on pushing forward. It was now late November, he reasoned, they lacked resources, and many on board had contracted scurvy.

The ship headed southeast toward Sitka, enjoying a rare stretch of sun and favorable winds. Within three days, Mount Edgecumbe, a dormant volcano on Kruzof Island that marks the entrance to Sitka Sound, was visible, suggesting *Neva* was just 10 hours' sail from its destination. However, the winds turned against the ship, blowing it off course. After having been tantalizingly close to its destination, *Neva* was tossed about by shifting winds for a full month. The midshipman Mikhail Terpigorev, whose recollection of the passage was related by naval historian V.N. Berkh in an 1817 publication, described a representative day during this period: "During 24 hours the wind blew sometimes the full 32 points of the compass and was accompanied now by gloominess and darkness, now by fog, rain, and sleet."

The situation eventually improved, and on January 8, *Neva* was once again within a day's sail of its destination. That evening, Mount Edgecumbe loomed to the left. Clouds and rain set in later, reducing visibility, but Kalinin was confident



On a wooded terrace on southeast Alaska's Kruzof Island, orange flags mark spots where artifacts associated with survivors of the 1813 shipwreck of *Neva* have been found.

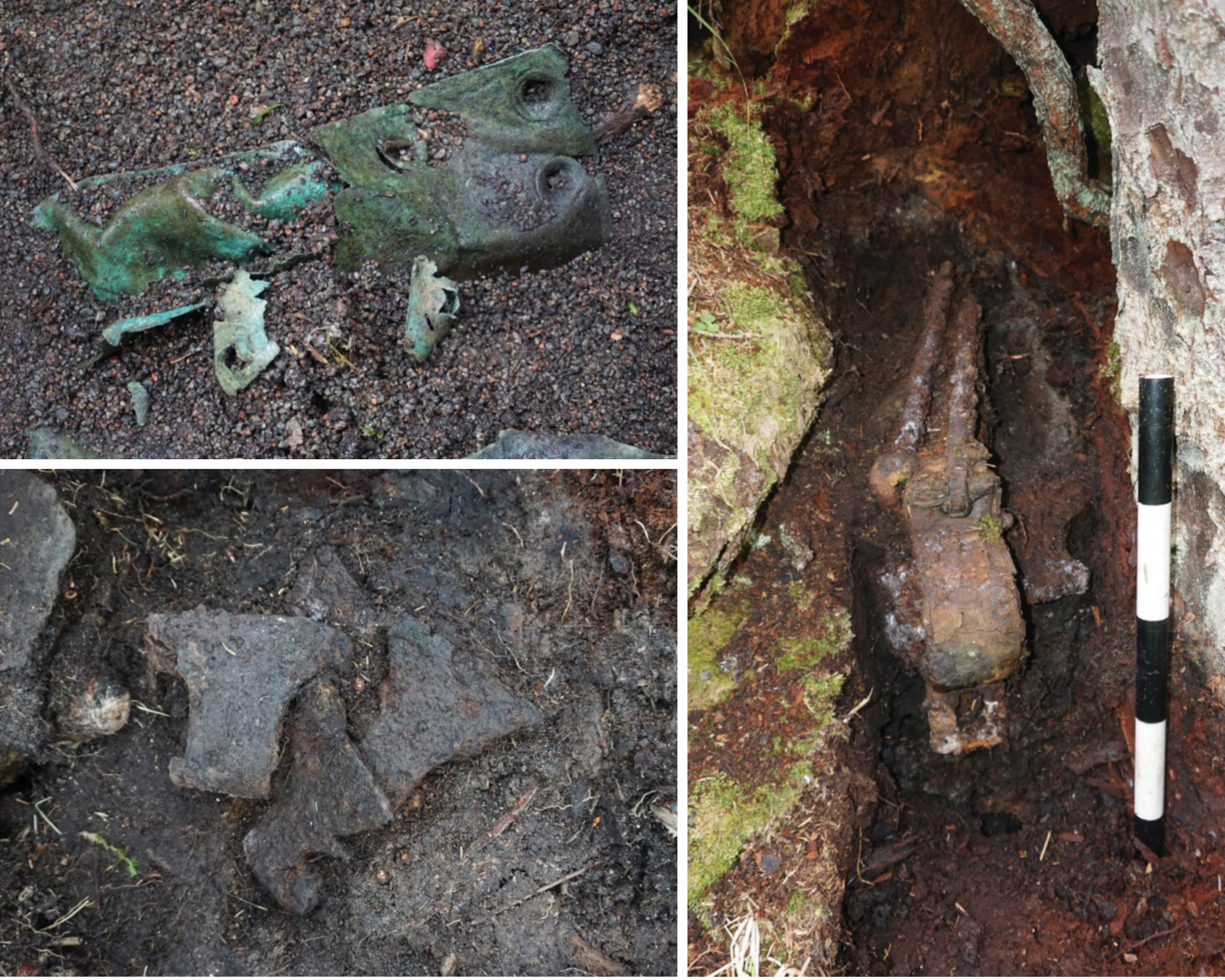
enough in his crew that he repaired to his cabin for the night. He awoke around 5 a.m. to frantic shouting. The weather had worsened as he slept, and the ship had somehow turned about so Mount Edgecumbe now lay on its right. With fierce winds buffeting the ship, the anchor was thrown overboard, but it hadn't been secured to the windlass and sank to the seafloor, useless. As the ship labored in the rough seas, it was nearly dashed against a high cliff. Then, its rudder having been knocked off, it ran aground on submerged rocks. A longboat was lowered with, in Berkh's description, "the women and most weakened men," but it overturned immediately, leaving its passengers to the mercy of the treacherous underwater terrain created by Mount Edgecumbe's eruptions. "There's lots of craggy slate and volcanic rocks in the area," says Ty Dilliplane, a historical archaeologist who focuses on Russian America. "The coastline where the waves come rushing in is jagged sharp. It's like trying to land on a knife."

The excavation team included members from the United States, Canada, and Russia, and secured cooperation from the native Tlingit, who consider Kruzof Island sacred ground.

Neva broke in half around 9 a.m., and those still on board grabbed onto makeshift rafts and pieces of wood and abandoned ship. In the end, around 28 men made it onto Kruzof Island. Of the 73 people who had been on board when the ship departed Okhotsk, at least a dozen had died of illness on the voyage, and more than 30 drowned the night it sank. Shortly after reaching shore, two more passengers died of exhaustion.

According to Berkh, the castaways had lost all their clothes and only made it through the first night, when temperatures would have hovered around freezing, because a fur trapper was able to start a fire with a flintlock pistol. They ate food that had washed ashore, constructed huts, and buried the remains of their drowned shipmates whose bodies littered the beach. Most of them, including that of Kalinin, had been sliced to pieces by the jagged rocks. Only two bodies remained intact, one of which belonged to Bornovolokov, the nobleman who had been on his way to take over as the Russian-American Company's chief manager.

The survivors lived in constant fear that the Tlingit might be lurking in the dense forest that abutted their camp and struggled to stay warm and provide themselves with enough food while trying to find a way off the island. On January 24, one of the castaways set out in search of help and encountered a native boy in a kayak. In exchange for the promise of a shirt, the boy shuttled the castaway to the Russian fort at New Archangel. Once Baranov was informed of the survivors' whereabouts, he sent out a number of boats to fetch them—as well as to salvage as much of the ship's cargo that had washed ashore as possible.



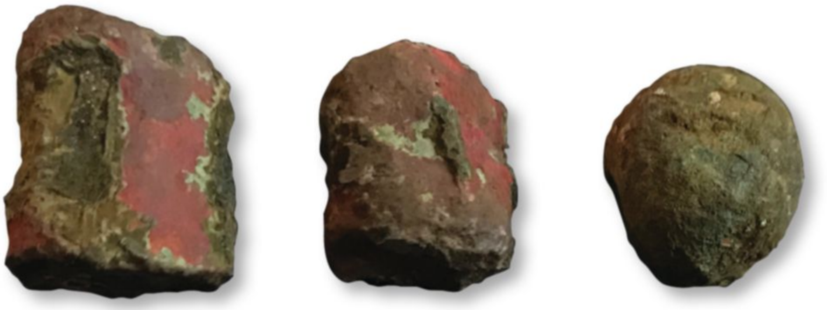
In the area where survivors of the *Neva* shipwreck made camp, researchers found copper sheathing (top left) of the sort used to prepare the ship for long-distance voyages. Nearby, they unearthed a cache of Russian axes (above left) with telltale barbs. In the roots of a spruce tree, they discovered a yard brace (right), thought to be the barest remains of *Neva*'s rigging.

For nearly two centuries after *Neva* sank, lore grew up around the great treasure it supposedly carried, but the wreck itself was never located. In 2012, Dave McMahan, who was then the state archaeologist of Alaska, led a team in a fresh attempt to find it. They first searched underwater in an area off Kruzof Island where they believed the ship had sunk based on survivor accounts, historical tide data, and reports from local divers, but found nothing. Dense kelp severely limited visibility, and the team's marine magnetometers were thrown off by the high iron content of the volcanic flows on the seafloor.

The team then used metal detectors to survey Kruzof Island. There, on a narrow terrace around 10 feet above the shoreline, they located a hearth as well as two caches of axes dating to the Russian period. "Russian axes are distinctive because they have a little barb in front of where the handle would be," says McMahan. "No other axes are like that." Based on known rates of tectonic uplift in the area, the terrace would have been roughly at the level of the shoreline in the early nineteenth century. McMahan strongly suspected they had located the camp occupied by the survivors of the *Neva* shipwreck during the two weeks before they were rescued. He spent the next few years securing funding to excavate further and seeking cooperation from the present-day Tlingit, who consider Kruzof Island sacred ground. "Originally my concern was that the *Neva* was a military ship and that it should be seen as a memorial or a cemetery," says Bob Sam of the Sitka Tribe. "I was concerned that if they found human remains, they should leave them alone."

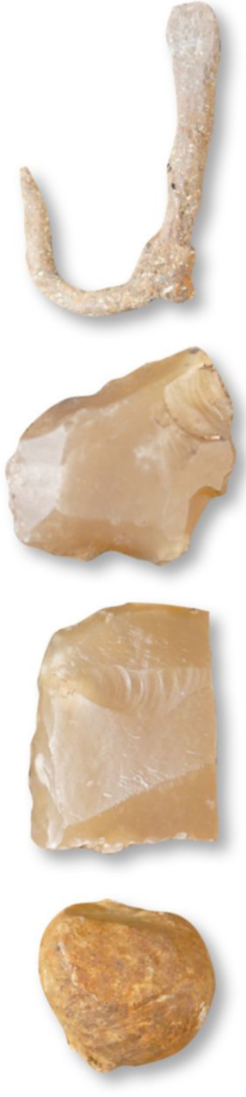
McMahan and his team returned to the site in 2015, having agreed not to disturb any human remains, and uncovered further traces of the *Neva* castaways. "Everything seemed to fit with a survivor camp situation," McMahan says. "We didn't find glass and ceramics and the things you would expect to find

To make ammunition for hunting, the survivors cut copper rods into pieces (left and middle) that were then hammered into shot (right) of a size that could be fired from a pistol.



on a settlement site." Instead, the team unearthed numerous scraps of copper thought to have come from the ship's sheathing, and a copper fishhook and several awls apparently fashioned from this sheathing or from nails. They also found musket balls that had been whittled down as if to fit into a smaller-bore weapon such as a pistol. Finally, they discovered small flakes of gunflint in a bundle of burned grass, which matched up with the story of the fur trapper who used a flintlock pistol to start a fire the night after the ship sank, saving the survivors from near-freezing conditions.

The next year, the team located a portion of *Neva* itself. A piece of iron hardware from the ship's topsail, called a yard brace, was found embedded and eroding in the root system of a tree on the terrace. "We'd worked so hard to find the ship in the water, but she actually was in the tree," says Evgenia Anichenko, a maritime archaeologist. Nearby they found another cache of Russian axes, more copper sheathing that appeared to have been reworked, and a bundle of iron bars.



The castaways made the most of the limited materials available to them, including (top to bottom) a fishhook possibly made from a nail, gunflints used to start a fire, and a lead musket ball.

THE CASTAWAYS' STAY on Kruzof Island was brief, and much of the useful material that washed ashore from the ship was retrieved when they were rescued. Still, the items discovered by McMahan and his team are providing new insights into how the survivors made it through this pivotal period. "Rather than just sit down and wait for somebody to rescue them, they were really active in their own survival," says McMahan. They managed to catch fish, quite possibly with the fishhook made from a copper nail, and hunt birds and Sitka black-tailed deer, as indicated by bones found at the site. "The deer come down onto the beach during the wintertime to eat seaweed," says McMahan, "so they would have been easy prey if the survivors had a gun, which we know they did."

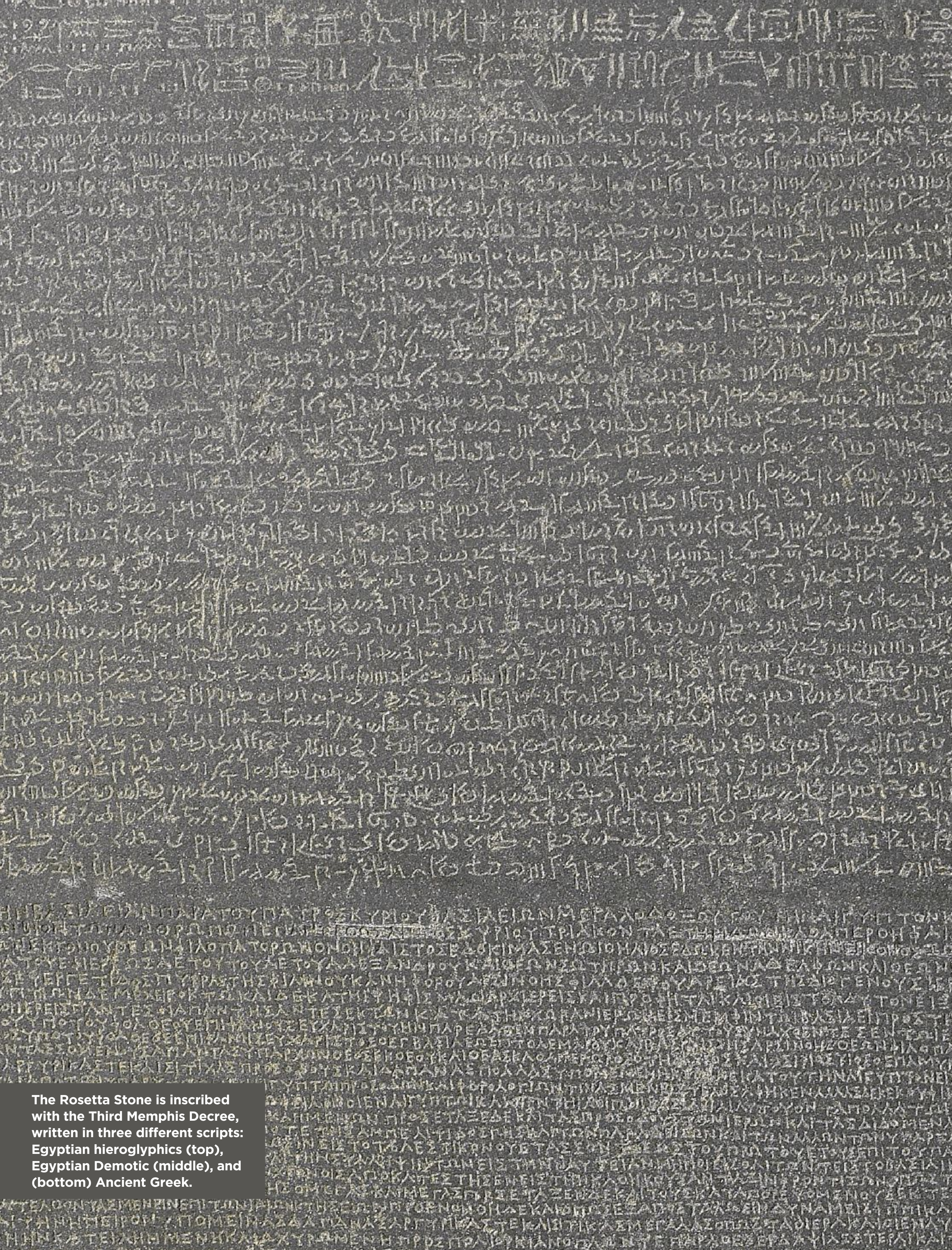
In order to hunt, the castaways needed ammunition, and they seem to have gone to great lengths to transform whatever they had at hand into serviceable projectiles. In addition to the lead musket balls whittled down to use in a pistol, the researchers found evidence of shot made from a variety of materials. "We have the whole manufacturing process here, from a chopped, butchered bronze pin to a hammered copper ball that is the same diameter as the lead balls we have," says historical archaeologist Daniel Thompson. "We think they were manufacturing ammunition from the wreckage of the ship to fit a working firearm. Based on the evidence, we believe they must also have been able to rescue a keg of viable gunpowder."

In contrast to the feuding and dissension that marked the voyage, once on land, the survivors seem to have banded together and worked cooperatively. "They didn't fall apart," says Thompson. "The camp was one contiguous unit from what we can see, and it didn't fracture into different groups. Much of the leadership of the ship, the officers, had drowned. It's interesting to see that the passengers and the low-level naval crew kind of reorganized themselves on shore." While the strife on board the ship may have helped lead to its demise, the cooperation demonstrated by the survivors on land likely helped them to make it through the period before they were rescued.

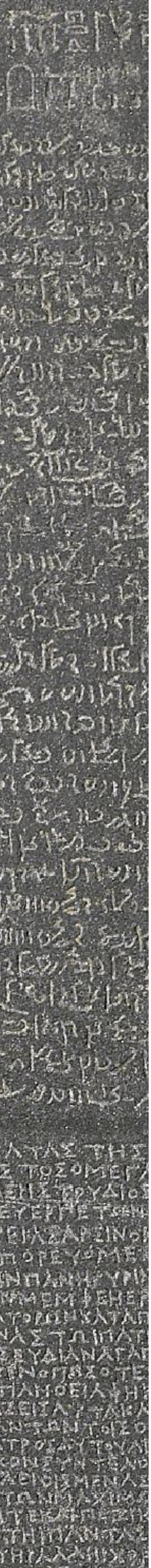
Near the end of the 2016 season, the team was excavating a hearth deposit when they came upon a rectangular depression outlined by wrought-iron nails attached to boards. They had discovered a makeshift grave—almost certainly holding one of the wreck survivors. "They were all mismatched, different-sized nails," says Thompson, "so we think they probably gathered bits of tacking and superstructure of the ship that had washed ashore and used it to make the coffin." McMahan notes that the grave, which was oriented to the east in the European style, likely held Bornovolokov, the nobleman who was to take over as chief manager of the Russian-American Company. "It would make sense to put forth some extra effort to build a coffin for someone of his stature," he says.

Honoring their agreement with the Tlingit, the team only dug far enough down to determine that they had indeed found a grave, and then backfilled it without excavating further. A few days later, the multinational research team and representatives of the Sitka Tribe and the Russian Orthodox Church gathered at the site to offer their prayers for Bornovolokov, for the ship, and for the rest of those who died on *Neva*'s final journey. ■

Daniel Weiss *is senior editor at* ARCHAEOLOGY.



The Rosetta Stone is inscribed with the Third Memphis Decree, written in three different scripts: Egyptian hieroglyphics (top), Egyptian Demotic (middle), and (bottom) Ancient Greek.



In the Time of the Rosetta Stone

Turbulent events surrounding the Rosetta Stone are being revealed by new excavations in the ancient Egyptian city of Thmuis

by **Jason Urbanus**

The Rosetta Stone is, inarguably, one of the most famous archaeological artifacts in the world. Shortly after it was uncovered by French Napoleonic troops in Egypt in 1799, it was seized by the British and transferred to the British Museum, where it has remained prominently on display for the past 200 years. The carved gray granodiorite stela is strikingly elegant, but the stone's significance lies more in its tripartite inscription than in its aesthetics. The juxtaposition of the three passages, identical but for each having been written in a different script—Egyptian hieroglyphics, Egyptian Demotic, and Ancient Greek—would prove to be key to solving the puzzle of deciphering ancient Egyptian hieroglyphics.

While many people may be familiar with the basics of the Rosetta Stone, few perhaps know what the text says or understand the events that influenced the stela's creation. The stone was once part of a series of carved stelas that were erected in locations throughout Egypt amid events of the Great Revolt (206–186 B.C.). These monuments were inscribed with the Third Memphis Decree, which was issued by Egyptian priests in Memphis in the year 196 B.C. to celebrate Ptolemy V's achievements and affirm the young king's royal cult.

It is sometimes forgotten that the Ptolemaic rulers were actually Greek. Ptolemy V (r. 205-180 B.C.) came to power as a child of six when his father, Ptolemy IV (r. 222-205 B.C.), died. Ptolemy V was no more than 14 when the decree was written.

The decree, nonetheless, chronicled his victory in the Nile Delta over a faction of native Egyptians who were violently rebelling against Hellenistic rule. While specifics of the revolt remain obscure today, the little that is known has been drawn from a few surviving texts and inscriptions, including the Rosetta Stone. Until recent excavations at the ancient city of Thmuis, located in an area where some of the bloody events are known to have occurred, hardly any archaeological evidence of the revolt existed. But at Thmuis, archaeologists have encountered signs of violent destruction and death, which they believe are the first definitive remains associated with the uprising. In addition, these discoveries are leading to a new and more subtle understanding of the Rosetta Stone—one in which it is viewed less as linguistic serendipity and more as a propagandistic document created for all to see in a tumultuous time.

Thmuis is buried beneath Tell Timai in the Nile Delta of northern Egypt around 40 miles from the Mediterranean coast. A tell is an artificial mound of earth and debris, common in the Near East, formed through long periods of occupation and abandonment of the same site. Thmuis, once located along the now-defunct Mendesian branch of the Nile, was originally established as a smaller companion settlement to the important port city of Mendes, just under half a mile to the north. While Mendes was a significant religious and political center dating back as long as 5,000 years, Thmuis, literally meaning "new land," was founded around the middle of the first millennium B.C. as an industrial suburb. The Mendes-Thmuis district lies along an important transit and trade corridor connecting the Mediterranean Sea with Upper Egypt and was renowned in antiquity for its production of perfume. Much of the perfume manufacturing process, from the infusion of olive oil with special scented flowers and herbs, to the production of small ceramic oil vessels, or *aryballoi*, was centered in Thmuis.

Later, during the Ptolemaic period (323–30 B.C.), Thmuis flourished and came to supplant Mendes as the dominant city in the region, eventually even replacing its sister settlement as capital of the administrative district. It continued to thrive in the Roman and early Christian periods. For archaeologists, the well-preserved ruins beneath Tell Timai constitute one of the best surviving examples of a Greco-Roman Egyptian city. It not only provides valuable insight into aspects of daily life thousands of years ago, but also into one particularly notorious event: the Great Revolt. All that it has to offer, however—its wealth of potential information—was very nearly destroyed.

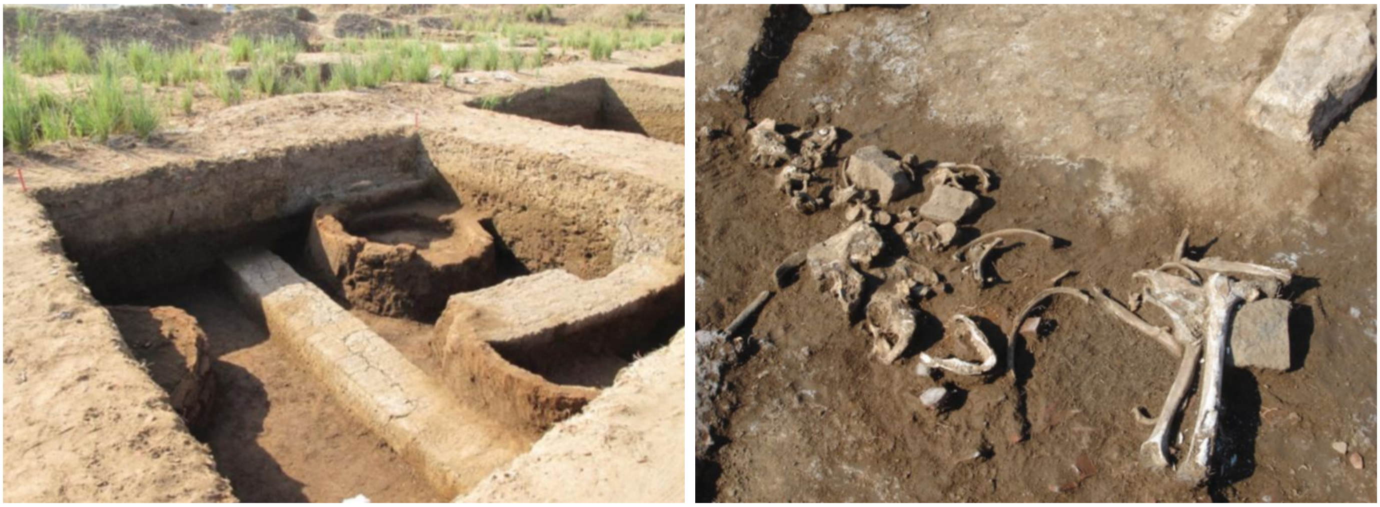
By 2007, Tell Timai's neighboring villages and their modern development were rapidly infringing upon its approximately 225 acres. Throughout the centuries, parts of the site had already been irrevocably damaged by villagers looting its mudbrick and stone structures for building materials. When new construction projects, including a large stadium, threatened to destroy part of the ancient city, archaeologists from the University of Hawaii were given permission by Egyptian authorities to survey the area. "I was overwhelmed with the level of preservation and the miracle of survival of a nearly intact Hellenistic Egyptian city in the Nile Delta," says project codirector Jay Silverstein. "The site was endangered, and if we hadn't started a project there, the site would have been lost."

Fortunately, the initial results of that survey were enough to convince the Egyptian government to alter their plans, and, over the past decade, the Tell Timai Project of the University of Hawaii has continued to excavate and conserve the remains of ancient Thmuis. For a brief period in the 1960s, archaeologists from New York University investigated the site, but other than that, the ongoing Tell Timai project is the first one dedicated to organized and systematic exploration and conservation. Thmuis offers a rare glimpse into Hellenistic Egypt, a period that is often overlooked. Egypt has an extraordinarily long and rich history, but both archaeological and popular attention often focuses on more "glamorous" eras, such as the time of the pharaohs and pyramids, or that of Julius Caesar and Cleopatra.

The importance of the discovery of the well-preserved urban core of Thmuis can't be overstated. It can immediately be seen as having been a thriving, sophisticated settlement, with a network of streets and blocks of mudbrick buildings, some of which were two and three stories high. But beneath this urban infrastructure, archaeologists have come across signs of a grim episode in the ancient city's earlier history—an extensive destruction layer consisting of damaged buildings, deposits of burned material, artillery, and even human skeletons. These deposits and artifacts are likely associated with one of the most volatile chapters of Ptolemaic and Hellenistic Egypt—the Great Revolt. "In Thmuis, archaeological and literary evidence coincide," says Silverstein, "to paint a grim picture of a countryside inflamed and a ruthless military response that devastated cities and reshaped the politics and religion of Egypt."

THE GREAT REVOLT WAS at least a hundred years in the making, and it would alter Greco-Egyptian relations forever. Silverstein says, "The Great Revolt is a fascinating and forgotten piece of history that offers some interesting insights on Egyptian ethnicity, imperialism, and Hellenism." Other than a brief period between 402 and 343 B.C., by the late third century B.C. Egypt had been occupied by foreign invaders for more than three hundred years. Greek (specifically Macedonian) rule over Egypt began with Alexander the Great, who conquered the territory in 332 B.C. and "liberated" Egypt from the oppressive Persian Empire. After his death in 323 B.C., Alexander's trusted general Ptolemy I inherited the kingdom, ushering in a period of Ptolemaic dynastic rule that would last until the death of Cleopatra in 30 B.C.

Initially, relations between the Greek Ptolemaic rulers and

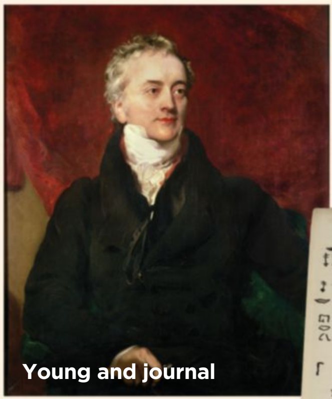


In the ancient city of Thmuis, at Tell Timai in the Nile Delta of northern Egypt, archaeologists have encountered the first tangible evidence corresponding to the time and events of the Great Revolt alluded to on the Rosetta Stone. There, in a layer characterized by broad devastation, a number of pottery kilns (left) were systematically destroyed and later built over. This unburied male human skeleton (right) was discovered lying amid the rubble. It bears unmistakable signs of a violent death.

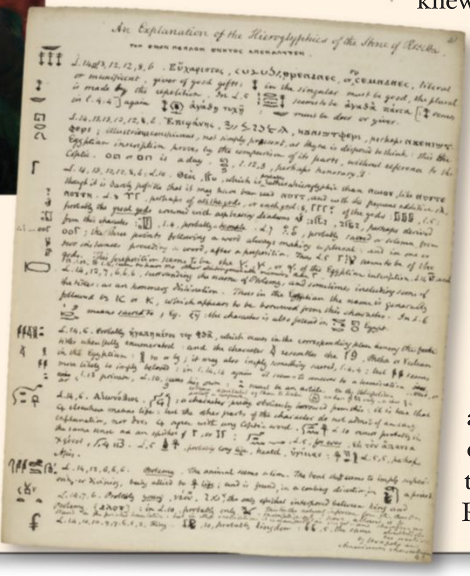
The Race to Crack the Code

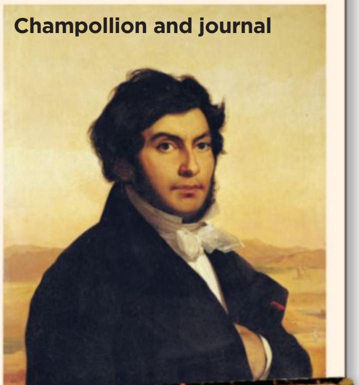
ALMOST IMMEDIATELY AFTER it was discovered in 1799, the Rosetta Stone was recognized as the potential key to decoding hieroglyphics and the long-lost language of the ancient Egyptians. The inscription, the Third Memphis Decree, was written three times on the stone in three different scripts: hieroglyphics (the sacred script of the temples), Egyptian Demotic (the script of everyday native Egyptian use), and Ancient Greek (the language of the ruling Ptolemaic Dynasty). Although scholars were still unable to read the first two, Ancient Greek was well known, and the Greek text on the stone provided a starting place from which to finally decipher the other two. For hundreds of years European scholars had attempted in vain to translate Egyptian hieroglyphics. When news of the Rosetta Stone's discovery reached Europe, the race was on.

Although several renowned intellectuals tackled the inscription, the competition to decipher Egyptian hieroglyphics essentially became a contest between two men, Thomas Young and Jean-François Champollion. Young was an English physician, polymath, and one of the brightest minds of his generation. Champollion, a Frenchman, was a prodigious linguist. One of the difficulties facing both men was determining whether Egyptian hieroglyphics even constituted a spoken language. Did the written characters and pictures denote letters, syllables, or words, or were they solely ideographic symbols representing an idea or action like today's "no smoking" icons or emojis. These convey concepts, but do not represent speech.

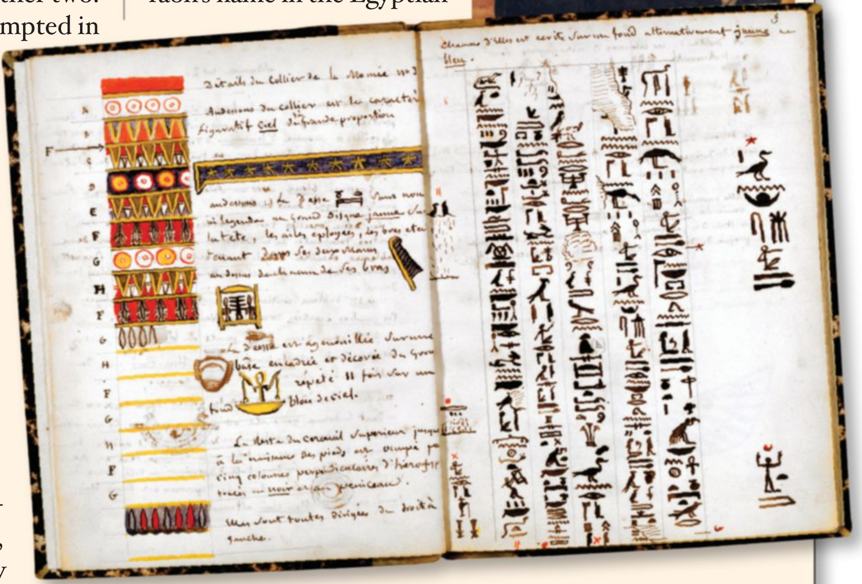


Young and journal





Champollion and journal



Fueled by their rivalry, both men made progress, especially in determining that when certain hieroglyphic symbols were grouped together within an oval enclosure, or cartouche, they represented the personal name or title of a ruler. Because the Rosetta Stone inscription records the name "Ptolemaios" so frequently, it was possible to identify the cartouche and hieroglyphic characters that spelled out the Greek pharaoh's name in the Egyptian text on the stone. It was a stunning breakthrough: Individual hieroglyphic symbols could represent letters or sounds. But while letters could be recognized, neither man knew anything about the language itself. Champollion then began to follow a different path. He looked to Egyptian Coptic, the little-known surviving liturgical language of Egyptian Christians, as he believed it might have been related to ancient Egyptian. He was right. In 1822, Champollion finally solved the riddle—he was able to read hieroglyphics. Purportedly, he rushed into his brother's office exclaiming, "I've got it!" before collapsing on the floor. Champollion had discovered that while hieroglyphs were sometimes ideograms, representing an object directly—the character of a lion can actually mean "lion"—they had phonetic value as well. For example, in hieroglyphics, the lion symbol also represents the letter L, the snake the letter J, the open hand the letter D. A somewhat poignant footnote to Champollion's work is that he never actually saw the Rosetta Stone. *–JU*

One of many stone ballistae balls, a type of ancient artillery, that were found scattered throughout the site.

the Egyptian masses proceeded smoothly, if cautiously. However, as the third century B.C. progressed, Greco-Egyptian affairs deteriorated. An influx of Greek colonists to Egypt, along with worsening economic conditions, spawned resentment. A grassroots nationalistic movement also began to take hold, fueled in part by Egyptian soldiers who had served in Ptolemy IV's army in the Battle of Raphia in 217 B.C. Having gained confidence and experience in the Ptolemaic army, many veterans returned home unwilling to accept their role as second-class citizens and actively pushed for the return of Egyptian leadership. By 206 B.C., the pot boiled over and armed rebellion against Greek rule broke out.

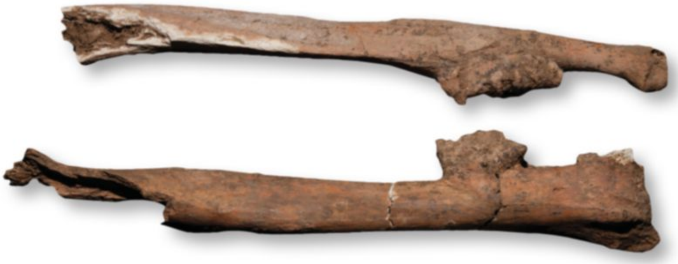
While the insurrection was centered mostly in Upper Egypt around Thebes, where a new pharaoh of Egyptian lineage was installed, the turmoil also extended to the Nile Delta. Parts of the Rosetta Stone document the brutal victory of Ptolemy V's forces over insurgents in a town to the west of Thmuis: "He went to the fortress...which had been fortified by the rebels with all kinds of work....The rebels who were inside of it had already done much harm to Egypt and abandoned the way of the commands of the king....The king took that fortress by storm in short time. He overcame the rebels who were within it and slaughtered them."

While there have been a few surviving ancient texts such as the Rosetta Stone from which to glean small details about the 20-year revolt, almost no archaeological evidence existed until the recent excavations in Thmuis. "The Rosetta Stone is one of the best sources on the Great Revolt," says Silverstein, "but without any archaeological data—and realizing that a major underlying motive of the Rosetta Stone is propaganda—it can be difficult to interpret."

The archaeological work at Thmuis has begun to illuminate parts of the inscription and place the Rosetta Stone within the context in which it was inscribed 2,200 years ago. Apparently, that context was one of violent conflict. When the researchers began work in the northern section of the ancient town, they soon discovered an industrial area of pottery kilns, once used to fire the small jars that held Thmuis' famous perfumes. They also discovered that the kilns had all been systematically destroyed. Lying atop one of the ovens was the skeleton of a young man. Due to the poor preservation of the bones and the lack of associated finds, it was impossible to determine the circumstances surrounding the body's disposal, but it piqued the archaeologists' curiosity. As the excavation expanded, signs of a sudden and catastrophic event became more apparent. A widespread destruction layer, consisting of ash and burned ceramics, blanketed the site. One house contained an assemblage of high-quality ceramics left in situ, and a collection of coins was found buried beneath the floor. In the ancient world, it was common to hide one's valuables when danger was imminent. The pottery and the coinage dated to the early second century B.C., consistent with the dates of the Great Revolt.

Other debris layers contained heavy stones used as ammunition or ballistae—a type of ancient artillery—arrowheads, and even part of a human skull, all convincing evidence of the rebellion. But perhaps the most substantial proof that the violence

happening elsewhere in the Delta had spilled over into Thmuis was found on another body lying amid the rubble. The skeleton, which belonged to a male in his 50s, displayed signs of massive physical trauma, both at the time of his death and in his younger days. Analysis revealed that the man suffered a series of blows to his jaw, spine, arm, legs, and ribs. “The skeleton is the smoking gun I had hoped for,” says Silverstein. “Here is a man who died a violent death, probably facing his enemies, and was not buried but was instead left among the ruins.”



The left forearm (radius and ulna) of one of the Revolt’s victims shows a fracture sustained immediately before death, but also a severe, healed parry fracture in the same location, likely suffered in combat when the man was younger.

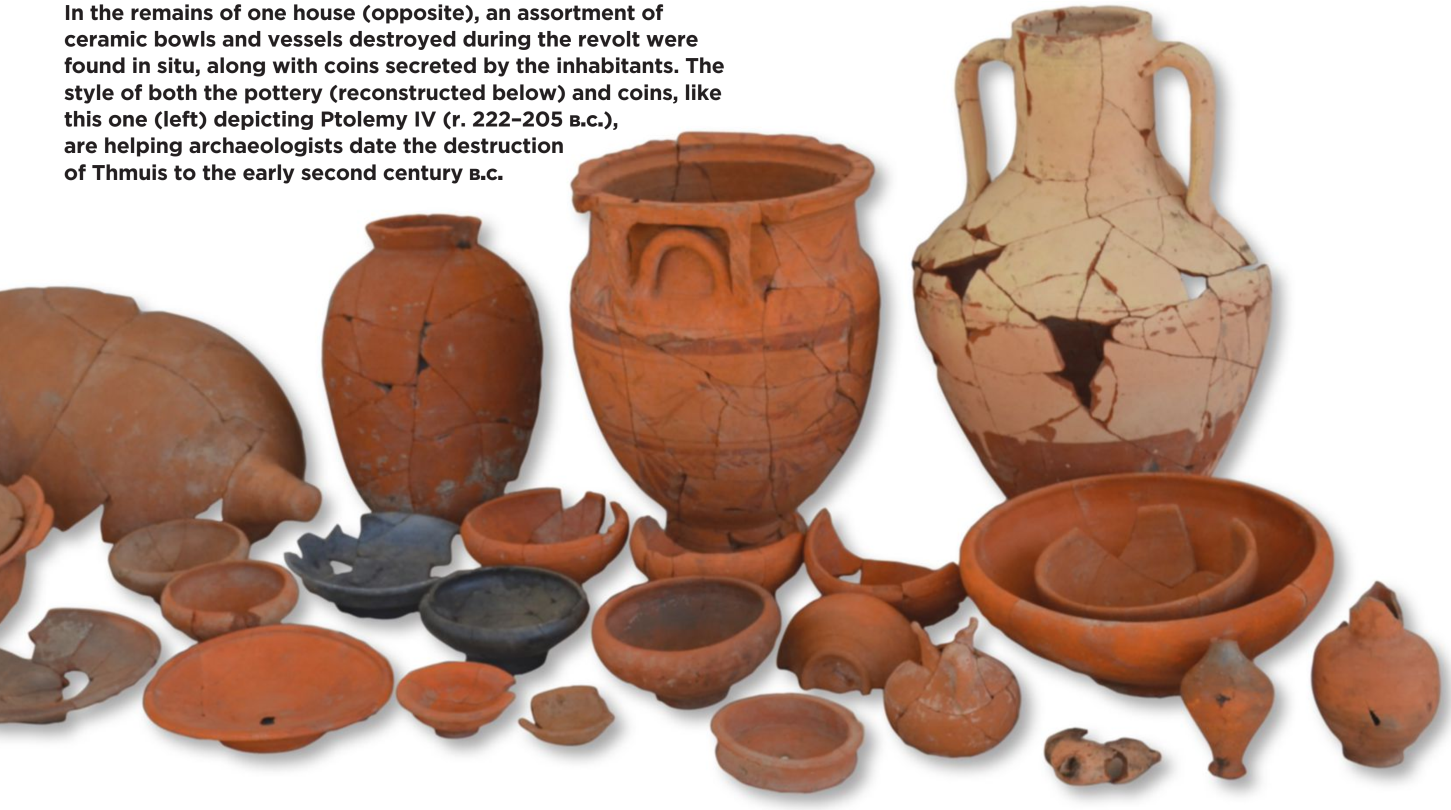
Additional inspection of the man’s skeletal remains further strengthened the theory that he was involved in the Great Revolt. A healed parry fracture on his left forearm indicated that the man had also suffered severe trauma years earlier, likely in military combat. Silverstein believes that, given all the evidence, it is possible that the unidentified man was one of those Egyptian veterans of the Battle of Raphia who were instrumental in inciting the revolt when they returned home.

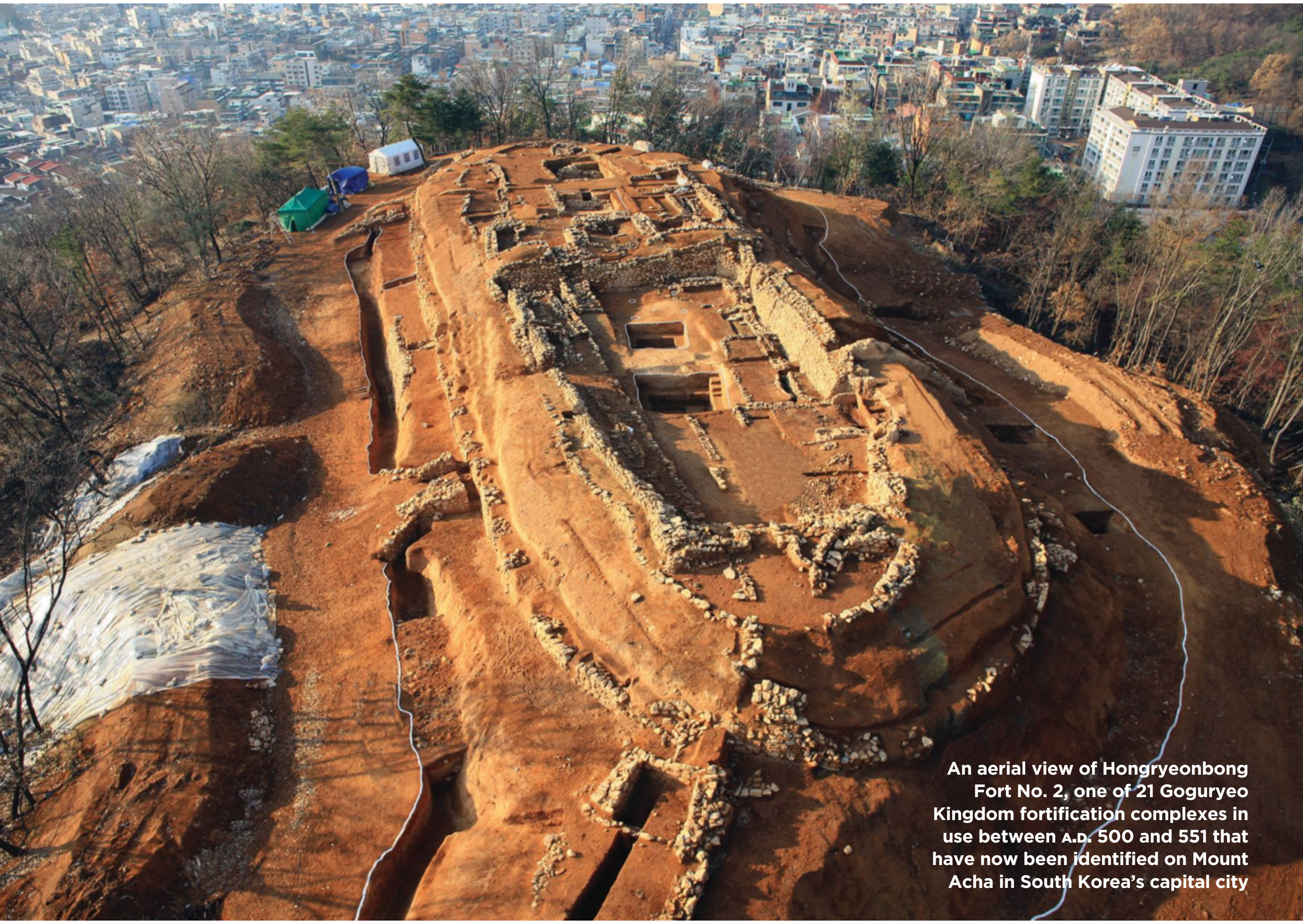
Although exploration of the site is ongoing—“We have barely scratched the surface,” notes Silverstein—Thmuis has already produced the most convincing archaeological evidence to date of the Great Revolt. While neither Thmuis itself nor the events that took place there are specifically chronicled on the Rosetta Stone, Thmuis’ story, slowly being revealed through excavation, can perhaps be viewed as indicative of that of settlements all over a Nile Delta region in upheaval. And even as the Rosetta Stone has supplied clues over the years about the revolt, the discoveries at Thmuis have also helped shape a new understanding and perception of the Rosetta Stone. It can now begin to be seen not just as a famous museum piece, but also as an object intertwined with human events, created over two millennia ago in a world populated with real people, at a time of great violence and high stakes. The tripartite inscription can be understood to have been designed by the Ptolemaic regime to ensure that the diverse populations of ancient Egypt would be able to read and understand its message extolling the sovereignty and legitimacy of the Greek pharaoh. “The Rosetta Stone transformed our understanding of ancient Egypt,” says Silverstein, “but I think our discoveries at Thmuis may help transform our understanding of the Rosetta Stone.” ■

An iron arrowhead provides evidence of the intensity of the fighting during the rebellion.

Jason Urbanus *is a contributing editor at* **Archaeology.**

In the remains of one house (opposite), an assortment of ceramic bowls and vessels destroyed during the revolt were found in situ, along with coins secreted by the inhabitants. The style of both the pottery (reconstructed below) and coins, like this one (left) depicting Ptolemy IV (r. 222–205 B.C.), are helping archaeologists date the destruction of Thmuis to the early second century B.C.





An aerial view of Hongryeonbong Fort No. 2, one of 21 Goguryeo Kingdom fortification complexes in use between A.D. 500 and 551 that have now been identified on Mount Acha in South Korea's capital city

FORTRESS ABOVE THE CITY

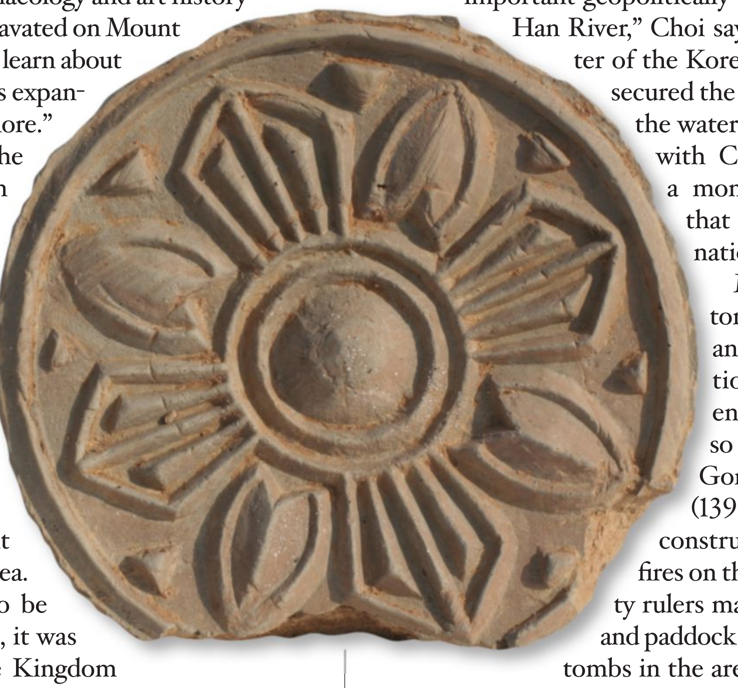
Surprising evidence of a powerful kingdom in the center of Seoul

by HYUNG-EUN KIM

MOUNT ACHA IS ONE of the few places in the bustling metropolis of Seoul that offers city dwellers quiet, wooded trails and a place to hike and picnic. At just under 1,000 feet, the summit provides an excellent vantage point from which to view both the mountains that surround the city and the Han River that cuts through its center. The mountain, which even has its own metro stop, has become a favorite spot for South Korea's dedicated and growing community of mountain climbers. Yet few visitors know that Mount Acha's panoramic views once made it an ideal military stronghold and that it is now one of the most important sites for studying Korea's ancient history.

More than 1,500 years ago, the powerful Goguryeo Kingdom kept as many as 2,000 soldiers stationed on Mount Acha, where they lived, ate, and slept in at least 21 fortification complexes now identified at the site. The 21 units, whose circumferences measure from about 130 to 1,300 feet, were more than 1,000 feet apart. The forts functioned independently of one another, but were situated along a line that allowed Mount Acha to operate as one large fortress. Soldiers had small farms and a water mill, and generally provided for themselves. They also had kilns to bake roof tiles and other pottery, and a smithy to forge iron and repair their weapons. Structures built as residences had *ondol*, the traditional Korean heating system designed to warm floors. Plumbing employed water piped from reservoirs and included drainage facilities. Archaeologists have, so far, recovered tens of thousands of domestic and military artifacts from the site. "It's a place that tells us everything about fifth- to sixth-century Korea," says Choi Jong-taik, professor of archaeology and art history at Korea University, who has excavated on Mount Acha for 20 years. "Here, we can learn about politics, the military, the nation's expansionist strategies, and so much more."

Prior to the discovery of the architecture and artifacts on Mount Acha, it was believed that there weren't any significant Goguryeo-era sites in South Korea. When one of the first forts to be excavated was explored in 1977, it was widely thought to be a Baekje Kingdom (18 B.C.–A.D. 660) tomb. The Goguryeo Kingdom, noted for its military prowess and expansive territory, was understood to have primarily occupied what is today North Korea and parts of China and Manchuria during its 700-year-run (37 B.C.–A.D. 668). Most of Goguryeo's important historical sites are located in North Korea, including the unique Complex of Koguryo Tombs, a World Heritage site. But when the current excavation campaign on Mount Acha began in 1997, Goguryeo pottery was uncovered nearby and archaeologists decided to take another look at the ceramics from the earlier dig. They concluded that, in fact, the site belonged to the Goguryeo period and was not a tomb at all, but a military fortification.



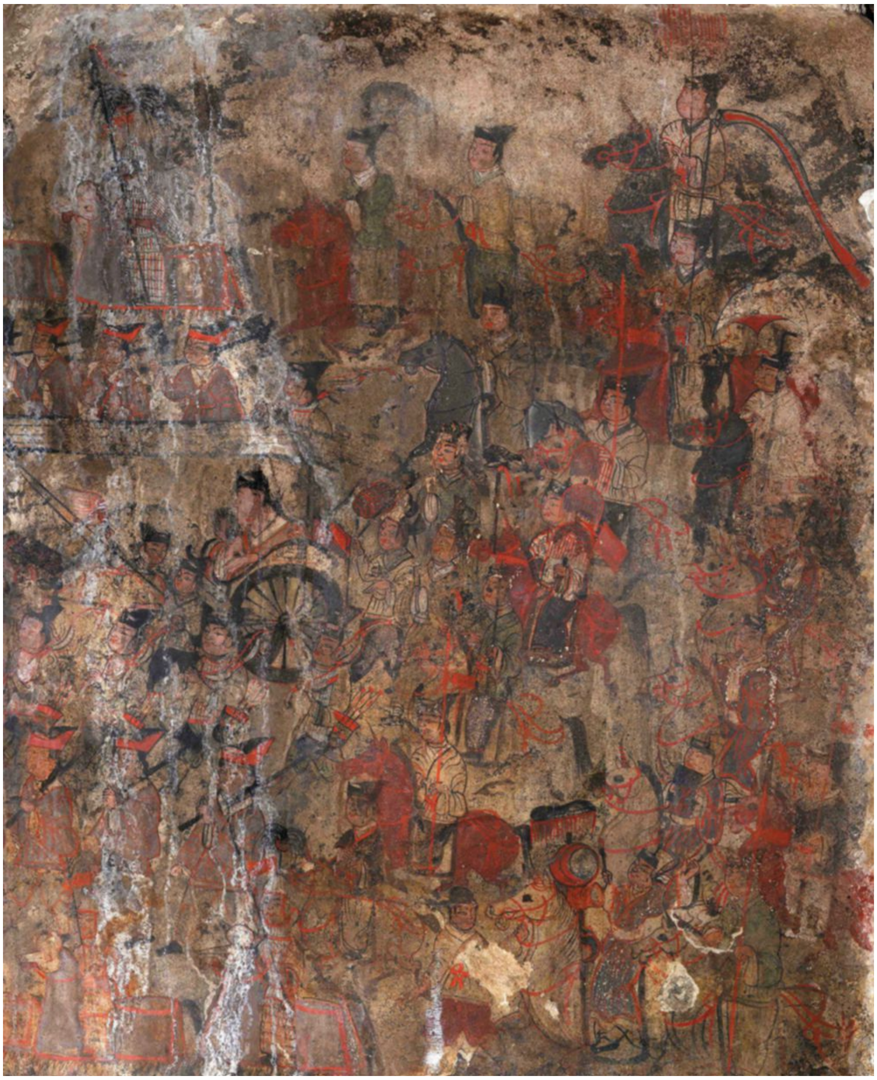
A Goguryeo Kingdom ceramic roof-end tile decorated with a lotus pattern—the first such artifact from this period found in South Korea—was unearthed at Hongryeonbong Fort No. 1.

After nearly two decades of excavation, the finds from Mount Acha have opened archaeologists' eyes to the possibility of locating and identifying Goguryeo sites in South Korea, and have made it clear that the Goguryeo had a strong presence in the south. "Currently, more Goguryeo forts are being excavated in areas around the Han River basin and in other regions," says historian Yoon Seong-ho. "The architecture and artifacts found on Mount Acha are the basis for these excavations."

The Han River Valley, where Mount Acha is located, was regarded as an enormously valuable strategic zone during the Three Kingdoms Period (57 B.C.–A.D. 668). At this time, the Goguryeo, Silla, and Baekje Kingdoms fought one another fiercely to gain sovereignty over the area, a contest that played out on Mount Acha as it did across the peninsula. Mount Acha was originally part of the Baekje Kingdom, but, according to historical records, in 475, King Jangsu (r. 413–491) of Goguryeo attacked Baekje's capital, Hanseong—located in today's southern Seoul and nearby city of Hanam—and killed King Gaero of Baekje (r. 455–475) on Mount Acha. This allowed Goguryeo soldiers to remain behind and form a stronghold where they would stay for decades. "It was important geopolitically to secure the area near the Han River," Choi says. "It's literally at the center of the Korean peninsula, and whoever secured the region would gain access to the waterway and control exchanges with China. It would give them a monopoly and superiority. In that sense, it was a strategy for national growth."

Mount Acha's later history shows that it remained an important military location well beyond the seventh century—and remains so even today. During the later Goryeo (918–1392) and Joseon (1392–1910) Dynasties, rulers constructed a station for beacon fires on the mountain. Joseon Dynasty rulers maintained a hunting ground and paddock there and constructed royal tombs in the area. During the Korean War in the 1950s, the North Korean People's Army encroached southward along a stream east of Mount Acha and entered Seoul to initiate an attack. A counterattack from South Korea's armed forces moved northward through the mountain range. Since the 1960s and 1970s, parts of the mountain have been used as a military heliport, which has damaged some of the archaeological remains.

Of the 21 fortification sites on Mount Acha that have been identified, eight have thus far been excavated. Soldiers at one of them, the Guui-dong Fort, which was the guard post at the front line, were apparently annihilated in a surprise attack by Baekje forces in 551. "We found that most Goguryeo troops withdrew from Mount Acha, taking all their tools and weapons," says Choi, "but at the Guui-dong Fort, two cauldrons, along with various weaponry, were left in the furnace that was used for heating and cook-



A mural from Anak Tomb No. 3 in South Hwanghae Province, North Korea, depicts a procession of Goguryeo soldiers with their weapons, including (upper left corner) a warrior wearing intricate and highly prized scale armor.

ing." Choi's team discovered two knives, 10 spearheads, four axes, and 1,300 arrowheads. These provide not just evidence of a defeat but are also clues to the size of the Goguryeo garrison at the fort, and possibly at the other 20 forts as well.

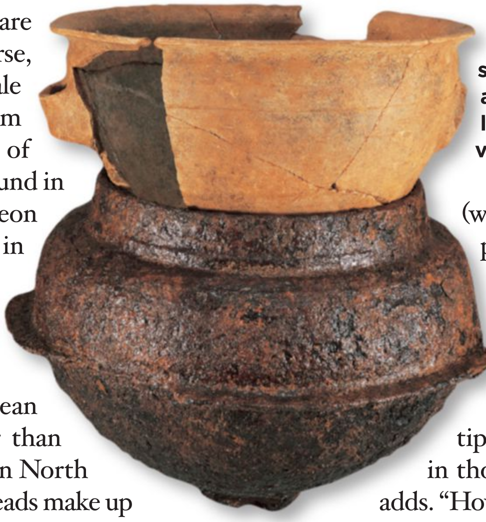
Of interest in determining the scale of these garrisons are 120 known Goguryeo tombs with mural art created between the fourth and seventh centuries. They are in today's Chinese province of Jilin and the North Korean province of South Hwanghae and capital city of Pyongyang. Credible historical records of Korea's Three Kingdoms are rare. The *Samguk sagi* and *Samguk yusa*—Korean annals and legends written in the ensuing Goryeo Period—are all historians have had to go on. The colorful and remarkably detailed tomb murals provide a wealth of information of a different kind about how people lived during the Three Kingdoms Period.

An 18-foot mural in Anak Tomb No. 3, located in North Korea's South Hwanghae Province and dating to 375, depicts 270 Goguryeo soldiers in a procession. The weapons they hold and the style of their armor and helmets indicate their rank and provide a good basis for the work of Choi's team. For example, the murals show that, after the fourth century, a Goguryeo soldier's main weapon was a spear. Researchers posit that because 10 spear points were found at the Guui-dong Fort, 10 soldiers were stationed there. Further, based on the size of this fort, they have concluded that the biggest Goguryeo fort on Mount Acha could have accommodated up to 100 soldiers. "Until these findings," says Choi, "most discussions of Goguryeo military organization have been based exclusively on murals or historical documents."

IN THE CASE OF THE so-called Achasan Fort No. 4, there was a furnace, but no cauldron was left behind and only a few weapons were found. Archaeologists did, however, discover an iron helmet of a Goguryeo soldier inside the furnace—the first of its kind to be found in South Korea. This is a rare artifact, particularly when in all of Korea, only five Goguryeo helmets have been uncovered. "Why would a soldier in battle abandon his helmet?" Choi wonders. "A helmet was as important as eating," he says. "They probably thought that getting rid of the heavy helmet would facilitate their retreat."

The Achasan Fort No. 4 helmet is what is known as a scale helmet, and is made by connecting many tiny pieces of metal with leather strings. Choi's team found 52 pieces of metal less than a tenth of an inch thick that would have made up the helmet, as well as 280 pieces that may possibly have been used for scale body armor. This type of flexible armor made it easier for soldiers to move while still being

Arrowheads make up the largest number of the nearly 2,000 remnants of weapons found at Mount Acha. Researchers believe that each Goguryeo solider was armed with at least 300 arrows.

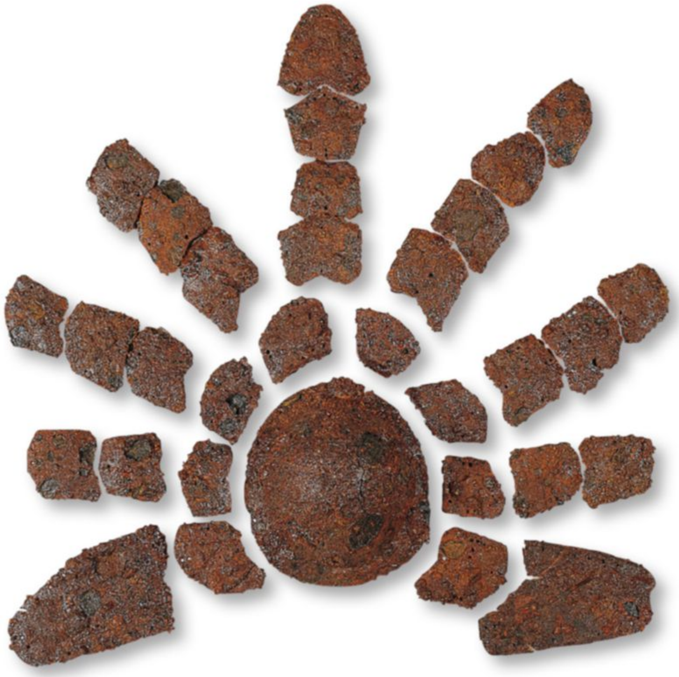


This iron cauldron was found at Guui-dong Fort on Mount Acha, where Goguryeo soldiers appear to have been have been annihilated in a surprise attack in A.D. 551, leaving the valuable heating and cooking vessel behind in a furnace.

protected. In Goguryeo murals, there are depictions of a soldier, along with his horse, wearing a magnificently intricate scale helmet and armor that covered him from neck to ankle. But so far only two sets of Goguryeo-era scale armor have been found in South Korea, the first in 2011 in Yeoncheon and the second in 2014 in Yangju, both in Gyeonggi Province.

While discoveries of Goguryeo armaments are rare, on Mount Acha a total of 1,757 pieces of Goguryeo weapons have been found, which South Korean archaeologists say is a higher number than the total reported to have been found in North Korea and China. Of those, iron arrowheads make up the largest portion, followed by metal pieces of scale armor.

These finds provide an important window into Goguryeo iron-making technology, which is known to have been the most advanced among the Three Kingdoms, and one of the factors that made the Goguryeo military so powerful. A study of Goguryeo-era iron discovered on Mount Acha found that Goguryeo artisans employed the same sophisticated ironworking technologies that were in use in China and the west at the time. Choi says, "Goguryeo openly accepted technologies from Europe, Persia, and China, and this attests to the broad-minded and unrestrained spirit and nature of the dynasty's people that even contemporary Koreans often admire."



A helmet made of interlocking pieces of iron-carbon alloy discovered at Achasan Fort No. 4 on Mount Acha is one of only five such scale helmets found in all of Korea.

Goguryeo craftsmen made weapons as well as agricultural tools using various iron-carbon alloys such as nearly pure iron (with a carbon content of less than 0.02 percent), cast iron (with a carbon content greater than 2 percent), and steel (with a carbon content somewhere between the two). They were fluent enough to freely choose among them, Choi explains. For instance, to make an ax they made only the tip out of steel and the rest of pure iron. "Iron in those days was like nuclear energy today," he adds. "How best to make use of that latest technology was an important issue."

Another telling find comes from Hongryeonbong Fort No. 1. Here a roof-end tile with a lotus pattern was found, the first Goguryeo roof-end tile to be excavated in South Korea. The Goguryeo used roof tiles only in important public buildings such as royal palaces, temples, or government offices. Choi believes that someone of high rank must have been stationed in Hongryeonbong Fort No. 1 and that it might have been the control tower for all the fortifications at Mount Acha.

Most Koreans are extremely proud of the Goguryeo Dynasty because it had a strong military and controlled massive territory," Choi says. "But those aren't the only reasons. Goguryeo is where much of Korean culture and tradition comes from." The origins of the famous grilled meat dish called bulgogi, the traditional Korean wrestling style called *ssireum*, and even taekwondo, all go back to the Goguryeo. Yet because most Goguryeo sites are nearly impossible to visit, South Koreans have felt somewhat detached from this part of their history. Until work began in earnest on Mount Acha, South Koreans didn't believe that such a massive and significant Goguryeo historical site could exist in their country. In the past, archaeologists have found Goguryeo stone monuments, but these served only as an indication that Goguryeo soldiers had been at a certain location and wanted to commemorate their presence.

Since 2000, however, a number of fortresses, villages, and Goguryeo tombs have been found in South Korea, supporting the theory that the southern part of the peninsula was, in fact, important to the kingdom. Mount Acha is now understood by scholars to be the largest Goguryeo site in South Korea. And during their hikes, people can read markers that identify standing architectural remains as Goguryeo military units. Two visitors' centers there explain the mountain's past. That said, many South Koreans remain in the dark about the Goguryeo Dynasty's impressive history high above Seoul. That history awaits them, once they venture onto Mount Acha's wooded trails. ■

Hyung-eun Kim *is a journalist in Seoul.*

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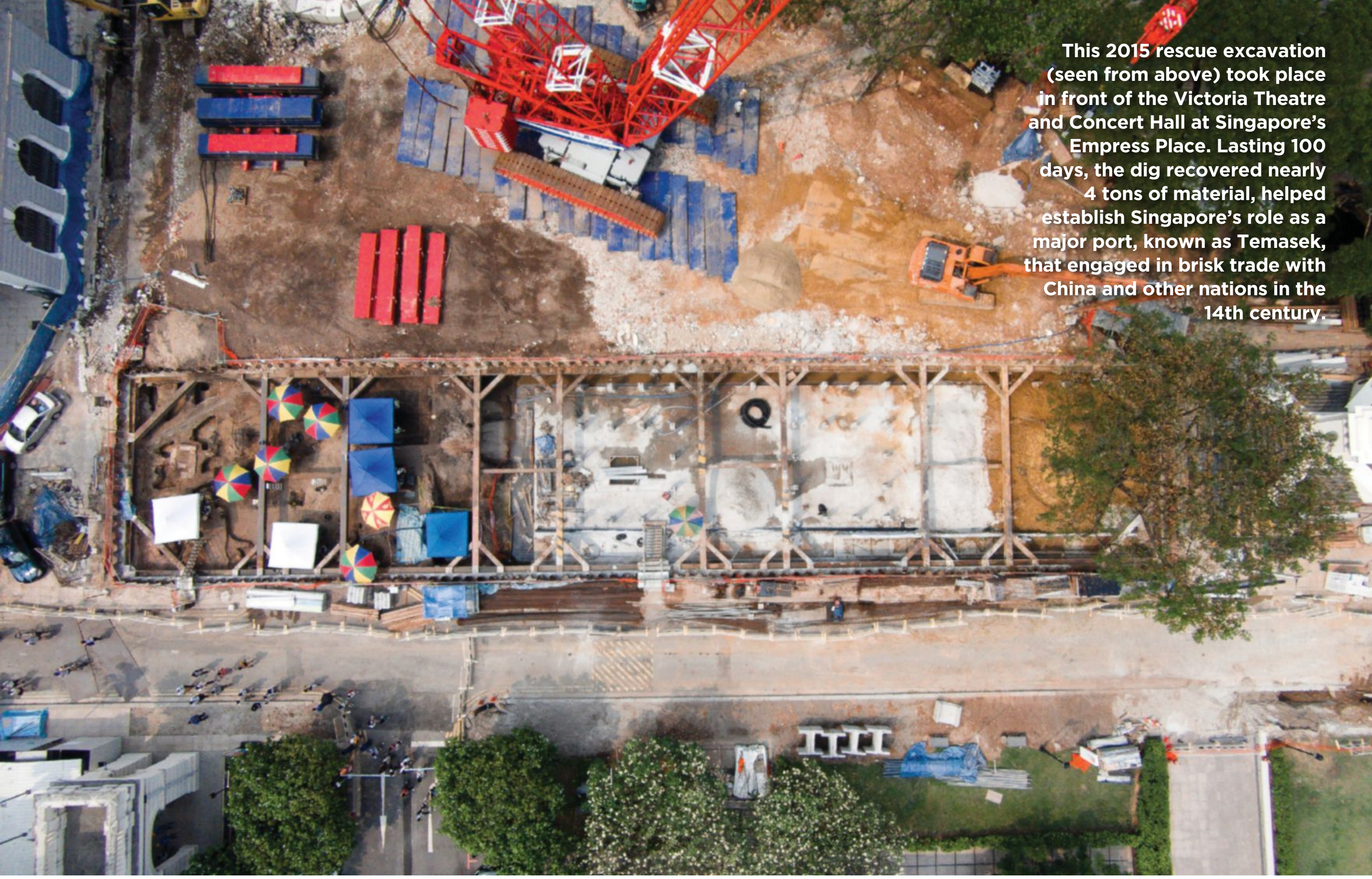


This 2015 rescue excavation (seen from above) took place in front of the Victoria Theatre and Concert Hall at Singapore's Empress Place. Lasting 100 days, the dig recovered nearly 4 tons of material, helped establish Singapore's role as a major port, known as Temasek, that engaged in brisk trade with China and other nations in the 14th century.

LETTER FROM SINGAPORE

THE LION CITY'S GLORIOUS PAST

The founding mythology of this city-state was once thought to be pure fiction—archaeology says otherwise

by Vaishnavi Chandrashekhar

In 1817, Sir Stamford Raffles, the governor of the British colony of Bencoolen in Sumatra, set off to find a suitable port site in the Strait of Melaka, a narrow channel in the Malay-Indonesian archipelago that connects the Indian Ocean and the South China Sea. Situated at the junction of two monsoons, the strait necessitated a long layover for ships dependent on seasonal winds. The region's premier entrepôt at the time was Dutch-controlled Melaka, where traders from Arabia and India would stop over until the next monsoon wind took them farther north to China, or back south laden with silks and spices. The opium trade with China was growing, and Raffles was determined to build a British base in the region. In 1819, he lit upon a small island at the southern end of the strait, off the tip of Malaysia—an unremarkable settlement that he nonetheless believed was both strategically located and possessed of a glorious history.

Raffles' conviction about the island's illustrious past came from reading his copy of the *Malay Annals*, a fifteenth-century narrative about the Malay kingdoms. According to this account, a Sumatran prince was out hunting on a hill when he spied a blinding white shore across the sea, a land he learned was called Temasek. On sailing over, he spotted what seemed to be a lion, and so named his new kingdom Singapura, or "Lion City" in Sanskrit. He ruled there for many years, as did his descendants after him, during which time, the *Annals* tell us, "Singapura became a great city, to which foreigners resorted in great numbers so that the fame of the city and its greatness spread through the world." Eventually, this great Malay port was conquered by the Javanese and its king forced to flee north to Melaka.

Raffles, hundreds of years later, saw evidence on the island for the tale: the remains of a fortified wall and what locals called Forbidden Hill, said to conceal the graves of kings. Raffles negotiated with the local sultanate to develop the settlement, and wrote to his patroness, Princess Charlotte, that he had planted the British flag on "the site of the ancient maritime capital of the Malays." Within a few years, a sleepy settlement had turned into a bustling port, the most important in the region.

Over the next two centuries, Raffles' foresight came to be celebrated, but his inspiration was largely forgotten. The tale of princes, lions, and kingdoms faded into legend, a charming backstory for the country's name. Raffles' colleagues had always been skeptical of the notion of an ancient, glorious Singapore, and there was little material evidence of it. Even the discovery in 1924 of gold ornaments in Fort Canning, built on Forbidden Hill, did not spur further investigation. Instead, the birth of a nation was dated to Raffles' arrival. According to the history books—and popular perception—the Singapore story began when the British stumbled on a fishing village in 1819.

That history has now been revised, and the textbooks amended. Largely due to archaeological excavations that began in 1984 and culminated in the island's largest-ever dig, in 2015, evidence now exists of a fourteenth-century port city that had long been buried under downtown Singapore. Led by American archaeologist John Miksic and more recently by Singaporean archaeologist Lim Chen Sian, a researcher with the Nalanda-Sriwijaya Centre Archaeology Unit at the Institute of Southeast Asian Studies, these rescue digs were driven by small private donations and passionate volunteers. Through fragments of earthenware, Chinese pottery, Indian beads, and Javanese jewelry, Miksic and others have pieced together a new story—one that pushes the city's origins back some 500 years before Raffles' arrival, traces the rise and fall of Singapore between the thirteenth and fifteenth centuries, and places it in the robust ancient maritime trade network of the region.

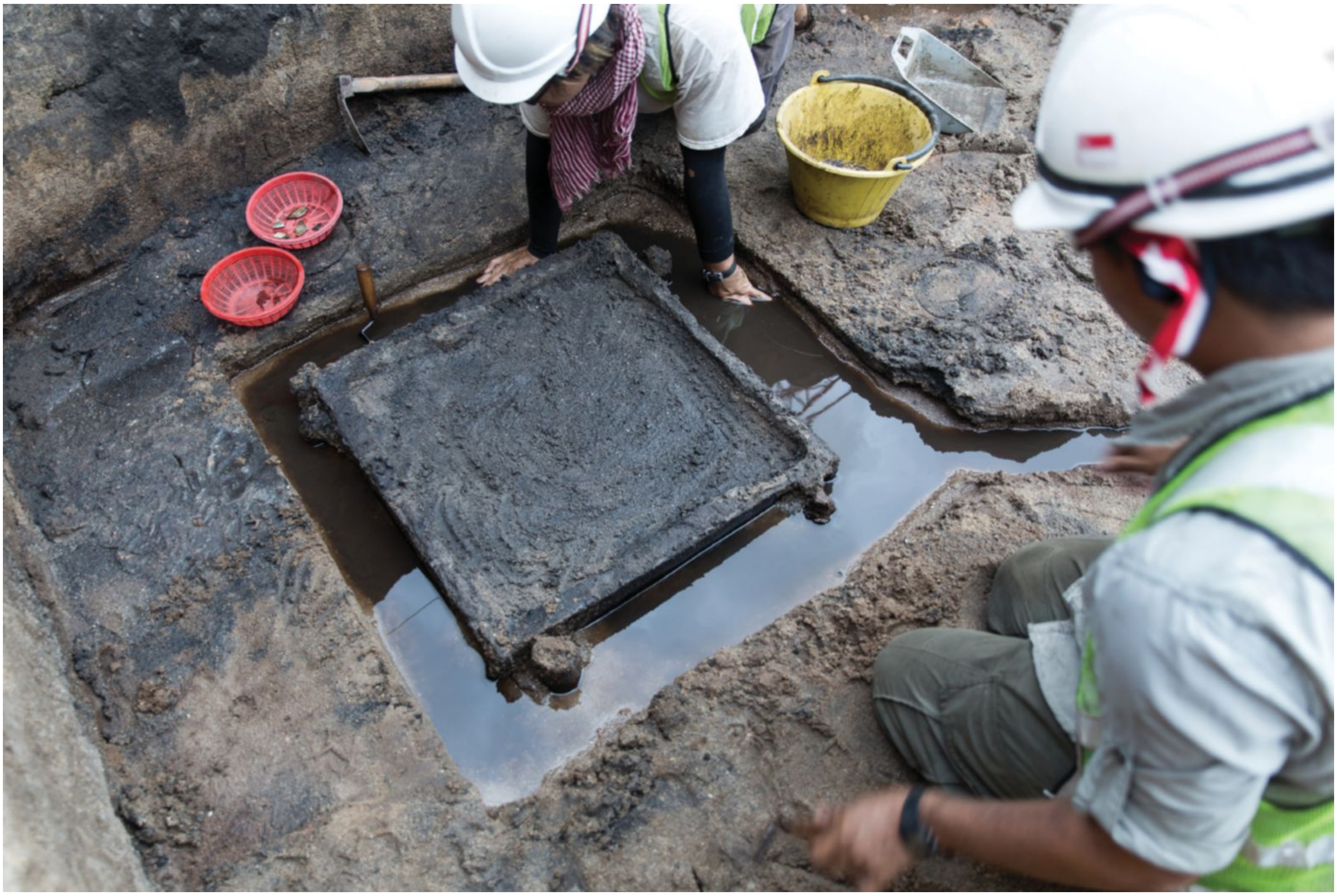
A carnelian bead, dating to the 14th century, uncovered at a cricket ground in Singapore, was imported from India. It is one of more than 10,000 beads found during numerous digs and indicates a high volume of trade.

In 1984, Miksic was teaching at the Gadjah Mada University in Yogyakarta, Indonesia, when he was invited to help with a dig in Singapore, the first of its kind. Miksic, who had been in Southeast Asia since the late 1960s, first as a Peace Corps volunteer and then as an archaeologist, had received his PhD from Cornell University, with a focus on trade and society in northeast Sumatra. He jumped at the chance to excavate within Singapore's Fort Canning Park. The fort was built in 1859 on the leveled summit of a small hill downtown, known in Raffles' time as Forbidden Hill, and host to a tomb or memorial purportedly of the last king. A plan to landscape the hill had pushed the curators of the country's National Museum to try to save any archaeological material that might lie beneath it. Funded by a private donation, Miksic and others spent 10 days excavating near the tomb. What they found exceeded all expectations.

Excavations at Singapore's Fort Canning Park uncovered this glass bangle that originated in Gujarat, India, in the late 13th century.

Parts of the site were undisturbed and the stratification layers were clear. Archaeologists found sherds of Chinese pottery—both imported and locally made—and coins of the Song and Tang Dynasties. Miksic recalls being taken by complete surprise. Although there were records of Temasek in Chinese writings, there had always been arguments over its location. And the *Malay Annals* were considered a romance—to the extent that even Miksic's Cornell adviser believed the Singapura story to be a fabrication. "The idea that the *Annals* were closely paralleled by reality was not taken seriously by historians," says Miksic. "We had no clue until we found this stuff."

Miksic went on to lead 10 more digs at Fort Canning after moving to Singapore in 1987, and undertook another 10 to 15 excavations along the Singapore River. The sites were chosen serendipitously—all were rescue digs carried out quickly when a building was knocked down or a parking garage chosen for development. The finds, in total, included 10,000 Indian and Javanese glass beads, Indian bangles and other pieces of jewelry, and 500,000 pieces of pottery, some of which are still



At the Empress Place site, researchers carefully excavate a 14th-century timber feature. Wooden planks have shown evidence that Temasek's residents had knowledge of shipbuilding techniques found throughout Southeast Asia.

being sorted. Chinese and Sri Lankan coins found along the riverbank speak to the high volume of trade, and Chinese glass beads and vessels, as well as the fragment of a rare porcelain pillow and a unique compass bowl, all suggest an exceptionally close relationship with China.

Significantly, a substantial amount of locally made household pottery was also found. Because cooking pots are unlikely to be imported, their presence indicates a settled community rather than a city of transients. The quantity and style of pots can also provide clues to the cultural affiliations of residents and the sizes of settlements in different parts of the old city. Some of the forms of pottery found, Miksic says, "enable us to certify that the local inhabitants were culturally related to those of Sumatra and the Malay Peninsula, rather than Java."

Taken together, the finds reveal that Singapore was a major trade hub by 1350, importing and exporting between India, Southeast Asia, and China. It was fortified—rare for the time—used currency, and likely hosted a multiethnic population governed by a local chief. Miksic says evidence suggests that it was not a political power or ceremonial center, but was perhaps like contemporaneous port towns of the Mediterranean. There was little agriculture, and services were the mainstay. Singapore procured raw materials such as iron, as well as porcelain, tortoiseshell, glass, and beads, from a network of suppliers. "The archaeology of Singapore confirms what we thought we knew from local chronicles such as the *Malay Annals* and Chinese texts," says Miksic, "while adding much more detail about the types of objects traded and the complexity of the economy of even a medium-sized port." He adds, "We are also beginning to see what a place with a strong Chinese influence would have looked like."

Comparisons with other port cities are difficult in a region that has been dominated by shipwreck archaeology, not urban digs. While there are several ancient ports along the Strait of Mela-

(continued on page 66)

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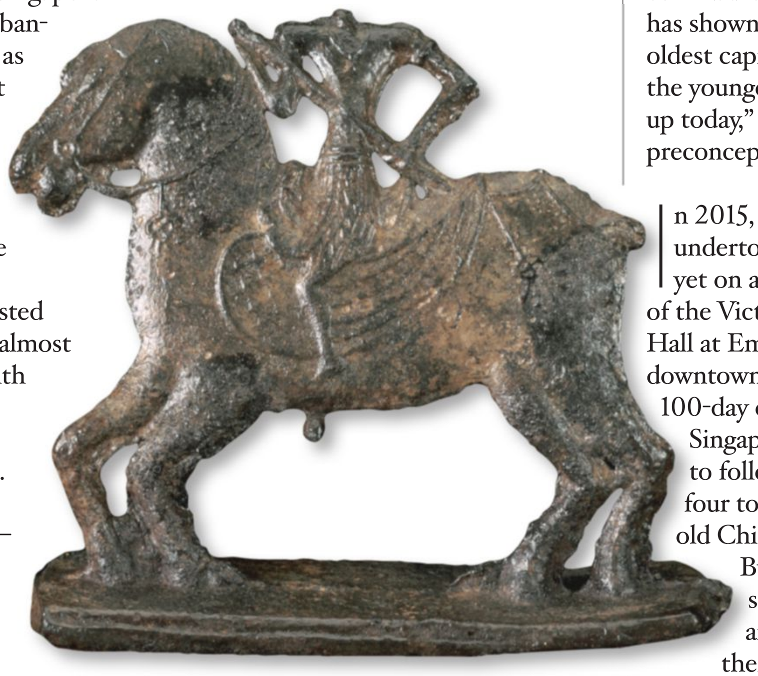
(continued from page 63)

ka, only a few have been excavated and almost no quantitative data has been published. Singapore's digs have been so fruitful in part because the ancient city occupied the same well-defined river-bounded area as the colonial city. Miksic points out that, luckily, nineteenth-century British planners reserved large open spaces, making excavation easier. As more finds are processed, he believes that Singapore may offer clues into early urbanization in the region as well as the spread of Islam. Ancient Singapore certainly adds to mounting evidence of the importance of the region's early maritime trade network—what Miksic calls the "Silk Road of the Sea."

Singapore's golden age lasted almost a century. There are almost no artifacts from the fifteenth century, when the city was likely conquered and the trade hub moved to Melaka. But Singapore continued to be a transit point for ships—Saint Francis Xavier wrote a letter while docked here in 1551—before it was finally abandoned in the seventeenth century. According to Miksic, the Dutch policy of forcing traders to call at Batavia (today's Jakarta) may be partly responsible, but trade in Asia also contracted in this period. The city was not revived until almost 200 years later, and when it was, he argues, it was because the qualities necessary for a successful port city had not changed. "Raffles was very close to the truth," Miksic says. "Singapore was not just a fishing village in the precolonial period, a hole in the ground. It was something greater than that, a successful port and a cosmopolitan society."

Why did ancient Singapore stay hidden so long? Colonial archaeologists in Asia focused largely on India, Miksic notes, while modern Southeast Asian historians were enthralled by temples, sculptures, and inscriptions. Just as importantly, perhaps, since gaining independence in the 1960s, Singapore has focused almost single-mindedly on the future. If Raffles sought a historical foundation for his colonial port, the new nation's prime minister Lee Kuan Yew looked ahead to building a modern state. That inexorable focus helped unify a diverse population of Chinese, Indians, and Malays, while transforming the country into an economic powerhouse—but, for a time, at the cost of its heritage. A landscape of malls and ever-redeveloping towers, the city today retains only a small portion of its colonial structures.



Discovered at Empress Place in 1998, this lead statuette of a headless rider may represent a figure from the *Malay Annals*. According to legend, this character was believed to have married a princess who he met beneath the ocean near Singapore. One of their three sons became Singapore's first ruler.

Even after 1984's exciting finds, Miksic had to raise private grants for every dig. And it would take more than a decade for his discoveries to begin getting out to the general public. It was only in 2015, the 50th year of independence, that Singapore's secondary-school textbook was amended to reflect the new understanding of the city's history, adding 70 pages on the precolonial period, with text and photos contributed by Miksic. Archaeology has shown that Singapore is one of the oldest capitals in southeast Asia, not the youngest. "The children growing up today," he says, "won't have the preconceptions their parents did."

In 2015, Singapore archaeologists undertook their largest excavation yet on a quarter-acre site in front of the Victoria Theatre and Concert Hall at Empress Place, located downtown on the riverbank. The 100-day dig was covered widely, and Singaporeans were encouraged to follow its progress. The nearly four ton yield included 700-year-old Chinese coins, stoneware, and Buddhist figurines. "The soil was jet black with artifacts. You could just grab them by the handful," recalls Lim, who led the dig. Among the discoveries were possible imperial-grade Chinese ceramics—physical evidence that China's imperial court recognized Temasek—and timber planks suggestive of Southeast Asian shipbuilding knowledge. "This is the first time we are uncovering such evidence from a fourteenth- to sixteenth-century archaeological context," says Lim.

The grandson of Chinese immigrants, Lim grew up despising the story he'd read in school—that an Englishman had turned a fishing village into a successful port. Like so many others, he'd gone to college in the United States. Having majored

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The 2015 excavation at the Victoria Theatre and Concert Hall was conducted on a scale not before seen in Singapore and received significant support. It marked a shift as the country and its citizens began to take an active interest in their past.

in archaeology and finance at Boston University, he worked on digs in Mexico and elsewhere. "At some point, I asked myself, 'Why am I digging up some other country when I know so little about my own?" he says. "Mexico has 6,000 archaeologists. How many does Singapore have? One." So he went back for a master's degree at the National University of Singapore and began participating in digs, initially under Miksic, and then leading them himself.

Unlike earlier digs, the Empress Place excavation was funded by the National Heritage Board—a clear sign of Singapore's changing approach to its own story. The past decade has seen a growth in citizens' heritage movements. Perhaps in response to this, and certainly in response to the rising tensions between Singaporean citizens and an expanded migrant-worker population, the government now sees heritage and culture as part of the "softer side" of nation-building in a post–Lee Kuan Yew era.

Lim's experience speaks to some of these changes. His generation, he says, struggles with identity. "Who are we? Where do we belong? Are we really Chinese? Do the Chinese in the People's Republic or in Taiwan think so?" And "What is 'Singaporeanism'?" Archaeology can help with these questions, he believes, since it provides a crucial link to the past and, indirectly, to identity. For Lim, learning about ancient Singapore made him feel more connected to his city. "I have a sense of sharing the same site with ancient people," he says. "I've played soccer on the same ground. At a fundamental level, it makes a difference." Just as Miksic trained him, Lim hopes to eventually train and build a pool of local archaeologists and lobby for a legal framework for digs.

Singapore is now likely the most excavated major city in Southeast Asia. A country long seen as a model of modernity in Asia now offers a model for urban archaeology. Yet much remains to be learned. In the coming years, Lim will look for more information on the ancient city's spatial organization, population size, industrial activity, and social and political structures. Says Miksic, "We know there was a mixture of east and south Asians here, just like there is today. But what was the proportion? Did they live in separate enclaves or together?" For now, it can be said that the findings show that ancient Singapore was a vibrant, multiethnic settlement—not unlike its modern-day avatar. Archaeology is recasting the history of this Asian city-state—and perhaps even what it means to be Singaporean.■

Vaishnavi Chandrashekhar ***is a journalist based in Mumbai.***

DISPATCHES

FROM THE AIA

archaeological.org

EXCAVATE ▪ EDUCATE ▪ ADVOCATE

AIA–SCS ANNUAL MEETING IS FAST APPROACHING

We invite you to join us in Boston for the 119th AIA-SCS Joint Annual Meeting from January 4 to 7 at the Boston Marriott Copley Place. The meeting begins on Thursday, January 4, with the public lecture and opening night reception. Academic sessions start on Friday the 5th and conclude on Sunday the 7th. The conference also includes the Annual Meeting of the AIA Council. Discounted hotel rooms are available from Monday, January 1, through Monday, January 8. Additional rooms are available at the Westin Copley Place. Please register and make your hotel reservations as soon as possible, as rooms will fill up quickly. For full details, visit the Annual Meeting section of the AIA website at archaeological.org/annualmeeting.

HERITAGE EDUCATORS CONFERENCE AT THE ANNUAL MEETING

In addition to the regular academic program, the AIA will host the Fourth Annual Conference for Heritage Educators on Saturday, January 6. Join heritage educators from a variety of fields to discuss public outreach programs, goals, successes, and challenges. Become a part of this growing community of like-minded professionals who are committed to helping each other succeed in creating a more informed public.

Featured sessions include a hands-on professional development event and a workshop on writing for education-focused publications. The popular lightning show-and-tell will be back. We encourage you to bring your favorite archaeology education program, resource, or activity and share it in a three-minute presentation. The deadline for submissions is December 1, 2017. We are introducing a poster session at the 2018 conference. If you have a project you want to feature as a poster, submit your entry by November 15.

More information about the conference and the details for submission of entries for the lightning and poster sessions are available on the AIA website at archaeological.org/education.

DISPATCHES
FROM THE AIA

EXCAVATE ▪ EDUCATE ▪ ADVOCATE

AIA AND HILTON GRANT WILL PRESERVE HISTORIC SUGAR FACTORY IN JORDAN

Masna al-Zukkar, Safi, Jordan

The Archaeological Institute of America (AIA) and Hilton Worldwide awarded a conservation and site preservation grant to protect an ancient sugar factory in Safi, Jordan. The factory, Masna al-Zukkar, is the largest and most thoroughly excavated in the region and provides evidence for the earliest known sugar processing in the area. Analysis of artifacts from the site suggests that the factory may have been in operation as early as the eighth century, and was fully operational between the eleventh and fourteenth centuries. The complex was abandoned by the late fifteenth century.

The project at the sugar factory, directed by Konstatinos Politis of the University of Athens, will train local residents to conserve archaeological materials and manage the site so the factory can be opened to the public. The conservation effort includes consolidating structures exposed during archaeological excavations, reerecting and protecting more than six collapsed arches, and upgrading the displays at the Museum at the Lowest Place on Earth in Safi.

In addition to the historical and archaeological value of the project, the program at the sugar factory will provide seasonal employment for local residents, and the development of the site will bring in tourism revenue. An outreach program across the Dead Sea region will broaden the appeal and impact of the archaeological and conservation efforts. The program will include community lectures, on-site visits, and an educational program for local schools, universities, and the tourism sector, specifically tour guides and hotels.

The Safi project exemplifies best practices in site preservation. It combines conservation with community engagement, enhancing the archaeological heritage of the region and the country and enriching the lives of the local residents and visitors.

This is the second time that the AIA and Hilton Worldwide have joined forces to protect an ancient site. An earlier grant was used for conservation work at the medieval site of Aghmat in Morocco. Aghmat, the capital of the southern districts of Morocco and the center of Berber control of the region, was a key location for commercial, political, and religious exchange in the Middle Ages. The AIA-Hilton grant was used to conserve four of the most important monuments in the central part of the city: the hammam (public bath), grand mosque, the adjoining ablution hall, and the royal palace.

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122 YEARS OF THE AIA LECTURE PROGRAM

The 122nd year of the AIA Lecture Program is underway and features 77 speakers giving 219 lectures at AIA Local Societies across the United States and Canada. The schedule for the 2017–2018 Lecture Program is online at archaeological.org/lectures. Lectures run from early September to the end of April. As always, all lectures are free and open to the public. Be sure to spread the word to interested friends and family.

ATTENTION GRANT AND FELLOWSHIP SEEKERS

We have revised the requirements for people applying for AIA grants. Unless stated otherwise, an applicant must have been a member of the AIA for two consecutive years (one year for students) at the application deadline to qualify for the grant. Please review the application requirements for AIA funding at archaeological.org/grants.

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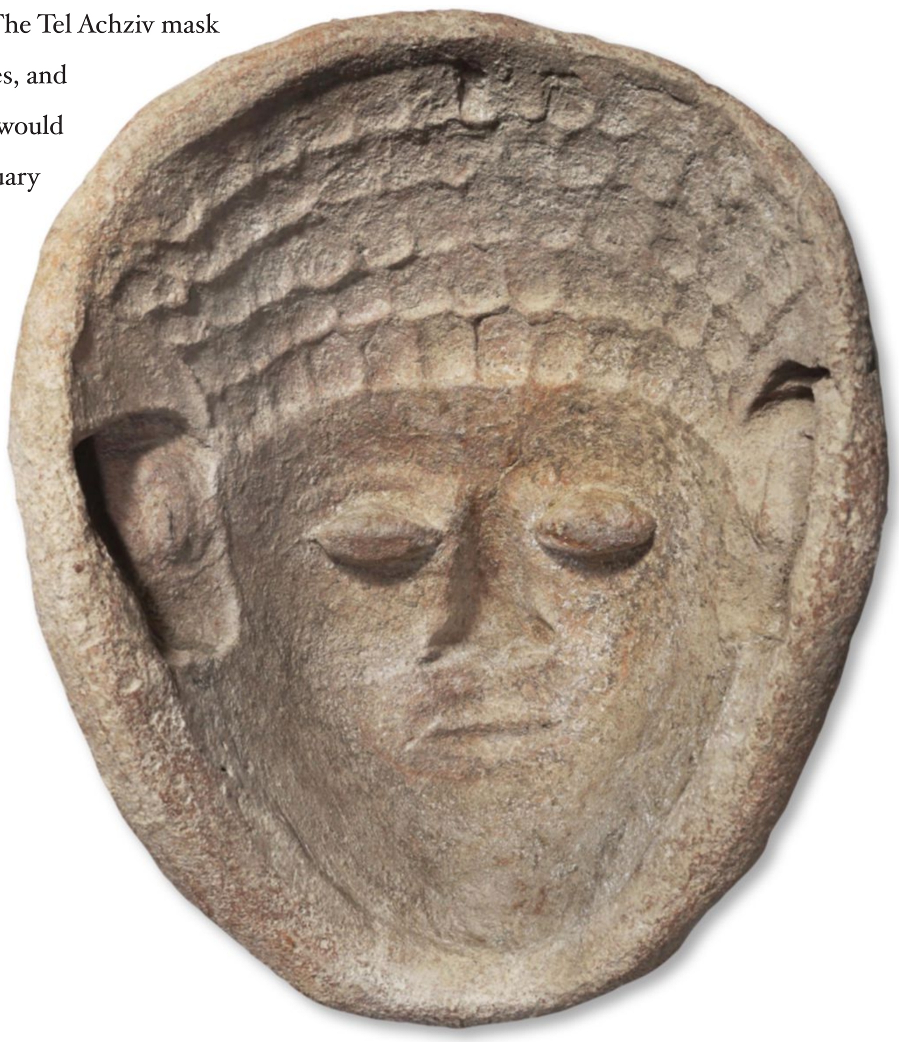
ARTIFACT BY JARRETT A. LOBELL

For many ancient Mediterranean cultures, there are particular types of artifacts with which they are most closely associated—for the Mycenaeans, it is tablets written in Linear B, for the Greeks it might be marble sculptures, and for the Romans, it may be the amphoras that transported Roman olive oil, wine, and fish sauce across the empire. For the Phoenicians, who inhabited the eastern Mediterranean in the second and first millennia B.C., perhaps the most characteristic artifacts are clay masks. Although these masks have been found from Phoenicia all the way to Spain, this is the first time a mold used to make such a mask has been discovered. "The artifact is exceptional because there are no other known clay molds of anthropomorphic masks, it was found in a sealed context, and it's almost complete," says archaeologist Michael Jasmin of the French National Center for Scientific Research.

WHAT IS IT	Mask mold
CULTURE	Phoenician
DATE	10th–9th century B.C.
MATERIAL	Clay
FOUND	Tel Achziv, Israel
DIMENSIONS	8.3 x 6.7 x 2.6 inches, a little smaller than life-size

Despite their ubiquity, however, and unlike tablets or sculptures or amphoras, the function of these masks is not so evident. The Tel Achziv mask mold was found with pottery bowls, chalices, and goblets in an assemblage that, says Jasmin, would likely have been part of a religious or mortuary ritual. "It may have been used during a funeral, then placed in a tomb with the deceased to retain a 'face' in the afterlife," says Jasmin. "We don't think it represents a specific person, but rather a generalized portrait of a young Phoenician man with distinctive local, ethnic physical traits. Even though facial details such as beards were painted on, these masks don't seem to represent real people."



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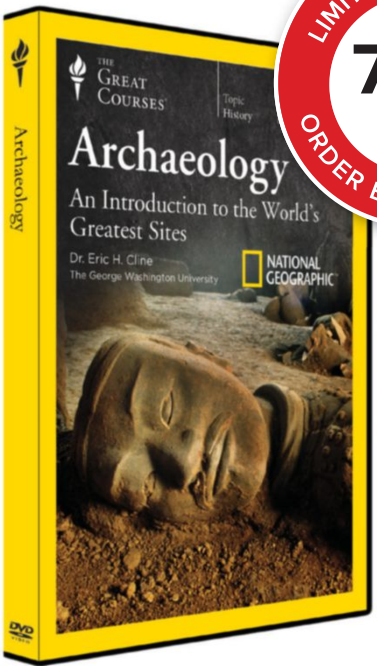

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